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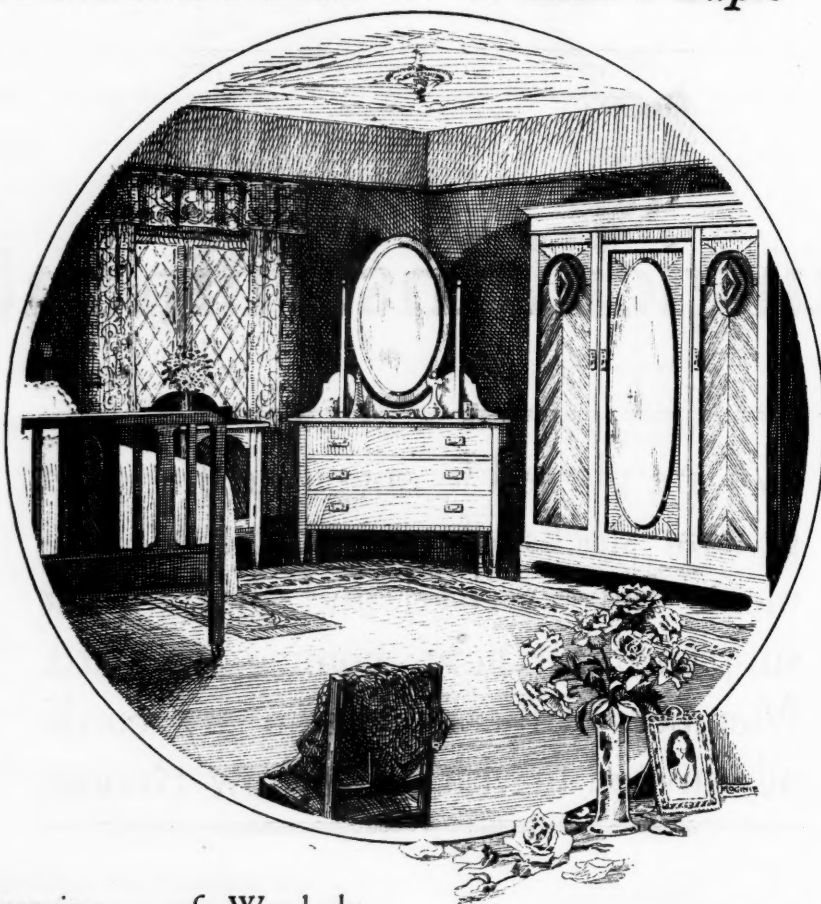
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Table of Contents

ORIGINAL ARTICLES—	PAGE.	BRITISH MEDICAL ASSOCIATION NEWS—	PAGE.
"Restoration of the Round Ligaments in Retroversion of the Uterus," by A. J. NYULASY, M.R.C.S., L.R.C.P.	517	Scientific	538
"The Streptococcus: The Biggest Menace to Mankind," by SYDNEY PERN, M.R.C.S., L.R.C.P.	518	Medico-Political	538
"The Normal Gastric Cycle," by FRANK L. APPERLY, M.A., M.D., M.R.C.S.	523	Nominations and Elections	538
"Myxœdematous Dyspituitarism," by J. P. HASTINGS, M.D.	526	MEDICAL SOCIETIES—	
"A Famous Congress," by E. H. BINNEY, M.B., CH.M.	527	Melbourne Pædiatric Society	539
REPORTS OF CASES—		PUBLIC HEALTH—	
"Patent Foramen Ovale," by C. JOYCE, M.B.	529	Food and Drug Standards	541
REVIEWS—		Industrial Hygiene	541
Intestinal Obstruction	530	OBITUARY—	
ANALYTICAL DEPARTMENT—		Stuart Patrick Croom	542
"Jellex" Jelly Crystals	530	CORRESPONDENCE—	
LEADING ARTICLES—		The Late Alexander Lewers	542
The Control of Venereal Disease	531	"Pulmo-Bailly"	542
THE WEEK—		Diathermy in the Treatment of Malignant Growths	542
Methyl Alcohol Poisoning	532	Puerperal Infection	543
Abscess of the Lung	533	A Knot in the Umbilical Cord	543
ABSTRACTS FROM CURRENT MEDICAL LITERATURE—		PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—	
Physiology	534	New South Wales	543
Biological Chemistry	534	BOOKS RECEIVED	544
SPECIAL ABSTRACT—		MEDICAL APPOINTMENTS	544
Artificial Pneumothorax	536	MEDICAL APPOINTMENTS VACANT, ETC.	544
		MEDICAL APPOINTMENTS: IMPORTANT NOTICE	544
		DIARY FOR THE MONTH	544
		EDITORIAL NOTICES	544

RESTORATION OF THE ROUND LIGAMENTS IN RETROVERSION OF THE UTERUS.¹

By A. J. NYULASY, M.R.C.S. (ENG.), L.R.C.P. (LOND.),
Honorary Gynæcologist, Perth Hospital.

RECENT papers and discussions in THE MEDICAL JOURNAL OF AUSTRALIA have suggested that a good deal of uncertainty still exists as to the best form of surgical treatment of prolapse and retroversion of the uterus. My own views in regard to the supports of the uterus and incidentally as to what appeared to me to be the most rational surgery of displacements are embodied in an address given at the Congress in Brisbane and published in *Surgery, Gynecology and Obstetrics*, July, 1921. In this address was a very short résumé of an operation (restoration of the round ligaments) I devised for retroversion; but it seemed to me, in view of the papers and discussions, that it might prove of interest to present a more detailed account of the operation. The operation was first described in *The Lancet*, July 31, 1915, but quite briefly. At that time my experience of it was necessarily less extensive than at present.

As to the genesis of restoration of the round liga-

ments, I have worked it out entirely on the living subject and now employ it as practically the routine surgical treatment of retroversion. The operation consists in splitting the anterior leaf of the broad ligament parallel to the round ligament between it and the bladder, undermining the opening and closing it with a purse-string suture, the outer limit of the purse-string being near the internal abdominal ring and the inner limit in the neighbourhood of the uterine cornu. The result is that the uterus is brought into anteversion, the round ligaments are contracted down to their normal length and undue laxity of the anterior leaf of the broad ligament is reduced. I have performed the operation on over two hundred women and those who have subsequently gone through pregnancy and parturition have done so without difficulty and without recurrence of retroversion. In some of the cases it has been necessary a few years later to re-open the abdomen for some independent pathological condition. The uterus has been found anteverted and with normal motility, while the primary operation has introduced no condition that could complicate the second operation. I wish to point out that the majority of the operations usually done for retroversion are based on the view that the excess in length of the over-stretched round ligaments should be eliminated by excision or by looping. This view is obviously opposed to the surgical principle that

¹ Read at a meeting of the Western Australian Branch of the British Medical Association on September 20, 1922.

the ideal treatment of acquired abnormalities is that which restores them to the normal. My own operation is in principle a restoration and in no sense a mutilation. It is in conformity with my conclusion that the round ligaments are only one of the factors concerned in maintaining anteversion of the uterus, the other factor being the anterior leaf of the broad ligament. The operation of restoration of the round ligaments deals with both of these factors, giving the round ligaments physiological rest and restoring the tension of the anterior leaf of the broad ligament. The technique of the operation, as already mentioned, has been published elsewhere. I claim that it is a close approximation to the highest standard of efficiency.

THE STREPTOCOCCUS: THE BIGGEST MENACE TO MANKIND.¹

By SYDNEY PERN, M.R.C.S. (ENG.), L.R.C.P. (LOND.),
Physician to Out-Patients, Saint Vincent's Hospital,
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SYPHILIS and tuberculosis are regarded at the present time as being the greatest scourges to mankind. They are uninfluenced by temperature or climate, being as rife in the land of the Esquimaux as in the South Sea Pacific Islands. There are tropical diseases, such as sleeping sickness and malaria, which account for many deaths in certain areas, but as menacing the human race they are not to be compared with the first two mentioned. There is another disease which far exceeds either syphilis or tuberculosis in its disabling influence and destruction of human life, but which up to the present time has not been recognized as such. It is world-wide in its distribution and a great majority of the human race is already infected by it. If we take the medical out-patient department of a large hospital in a temperate climate and review the cases coming for treatment, we get a fair estimate of the disability and sickness produced by different diseases. In going through the records of the last two hundred patients I have attended in the Out-Patient Department of St. Vincent's Hospital, I found that 70% were suffering from focal infections and as a streptococcus is found in 97% of these foci, we may safely assume that each of these persons was infected by the streptococcus. Of the same patients, 4.5% were infected with syphilis and 3% with tuberculosis. It is quite possible that amongst these 70% there were present others with both syphilis and tuberculosis who showed no manifest signs of either. Of the 70% of focal infections, 40% were tonsillar, 21% pyorrhœal and 9% sinus infections. Out of the total of two hundred patients, one hundred and forty were infected with the streptococcus, nine with the spirochæte and six with the tubercle bacillus, leaving forty-five to be accounted for by other causes.

I do not wish to infer that we must ignore the presence of staphylococci, diphtheroids and other bacteria or the fact that combinations of infections

are often worse than pure infections, but of all these the streptococcus, with its powers of transmutability, is by far the most active and dangerous.

I may state that a few years ago, before the plan of hunting out focal infections had become so greatly adopted, I found 65% out of a thousand consecutive cases at the Melbourne Hospital Out-Patient Department. These 70% are suffering from a disease not yet named, but according as the organ or the tissue is involved is called the name of that organ or tissue with "itis" tacked on to it.

If we review diseases in a broad aspect, we find that those which are a world menace, are bacterial in origin. I will select the three chief offenders—tubercle bacillus, *Spirochæta pallida* and the streptococcus—and consider their habits within the body. We have also to consider the methods of the body for ridding itself of these invaders and the means of minimizing the nuisance if the body is unable to rid itself of them. At the age of sixteen 75% of white people have been infected with tuberculosis and have become sensitized to further invasion. These have either killed the bacillus and gained certain immunity against fresh infection or the bacilli are snugly entrenched within barriers where the phylactic or defensive properties of the blood and tissues cannot assail them. It is now a struggle between the tubercle bacillus and human being. As the tubercle bacillus on its first invasion produces little effect, a reaction on the part of the body is slow in being produced. This allows it often to gain a firm footing before antitoxins and antibodies are produced and the tissues become sensitized by its presence. It is probably at this stage that the crucial point will arise as to whether all the tubercle bacilli will be killed or whether they will lie dormant in some entrenched position whence they may slowly invade the lungs or other tissues for which they may have a selective affinity. The chief factors concerned here are: What sort of immunity have we inherited? How large was the dose of the inoculation? What was the state of the phylactic properties of this body at the time of the invasion? Naturally a poor hereditary immunity would be in favour of the bacillus, as would be repeated large doses of infection with a strong immunity. In the focus it multiplies and from time to time invades the tissues of the body by blood or lymphatic stream. Once away from its protecting barriers it is upon a perilous journey. Its chances of living and establishing itself are few, as it has to contend with poisonous products in the blood and leucocytes ready to engulf it. Some gain a footing and survive by throwing out a barrier of protection to themselves, but as each little colony is established, the tissues are being flooded by more toxins which gradually wear out the phylactic powers of blood and tissues till the day comes when the tubercle bacillus can roam the body with impunity, as there are no mechanisms to destroy it. Such is the stage of miliary tubercle from which there is no going back. The phylactic powers are exhausted. The giant succumbs to the mite. I must here apologize for going over ground known to all, but it is helpful for the result of comparison.

With syphilis we see a different tale. Very soon

¹ Read at a meeting of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association on May 5, 1922.

after the initial infection there is a generalized blood infection which does not kill its host, as a generalized blood infection of tubercle bacilli would do, but a mutual understanding is arrived at because the body is to our knowledge unable to produce any phylactic agents strong enough to kill out the spirochæte. We are dependent upon mineral poisons to accomplish that end. The spirochæte, like a tubercle bacillus, is also able to entrench itself and so rid itself from the annoyance of having leucocytes trying to devour it and poisons thrown out in attempt to destroy it. It is owing to the density of these entrenchments that it is impossible to eradicate it completely in old-standing infections. Syphilis has some very interesting peculiarities, such as having affinity for certain tissues in some people and other tissues in others; this will be more fully dealt with when we come to compare the streptococcus with spirochæte.

Let me now try to sum up certain facts concerning the streptococcus and its behaviour within the body. Firstly, it is such a frequent inhabitant within the body that many medical men and bacteriologists have not been in the habit of looking upon it seriously, particularly in some of its phases. Are they right or wrong in this matter? Because you can find a streptococcus in nearly everybody's mouth, does that mean that it is harmless? A bacterium in the mouth is outside the body and therefore harmless. It may come from a carious tooth; but is the same streptococcus harmful within the body? That is entirely dependent upon its ability or inability to live within the body. If it is able to live and multiply within the body, the host must suffer or die. In the one case he has to put up with the toxins of the bacteria; in the other case he will develop septicæmia. In tuberculosis and syphilis we do not recognize any marked degree of difference in virulence, although we know some to exist. In dealing with the streptococcus, we find a very complex state of affairs. Until recently streptococci showing different characteristics were considered as distinct species, but since the advent of work by Rosenow, Schottmüller, Billings and others it has been found that a great many are one and the same organism possessing the power of transmutability. Not only that, but in each of its different forms it is likely to vary in degrees of virulence. The same has lately been shown of diphtheroids. This combined with the varying degrees of resistance in different people brings about an extraordinary range of conditions and symptoms. A prick with a needle may produce septicæmia with death within a day or two, whereas a person may grow and breed streptococci within his tonsils for fifty years with apparently little harm resulting.

This brings me to the methods of its entry to the body. In the first case there is a sudden entry of a virulent organism against which the body has not prepared any phylactic agents. Before it has time to marshal its forces, the streptococcus has multiplied to such an extent as to overwhelm the body. In the second case we find the streptococci living and multiplying in such positions that their toxins are capable of being absorbed into the body and the actual organism is capable of gaining an en-

trance from time to time. For instance, streptococci breeding within a tonsillar crypt or between the gums and teeth are not truly within the body, yet are capable of gaining an entrance. In such positions they must also be unassailable by the phylactic properties of blood and tissues. It is quite possible that streptococci can live and multiply within the tonsillar crypts, but not penetrate the body, but who is to say when and how this occurs? Since it may be possible, is it worth chancing it? At what age this initial infection takes place is hard to say, but it is probably early in life, within the first three years or so.

As far as we are aware, infection is early conveyed from father or mother to the children, the cocci finding lodgement in the tonsillar crypts and there multiplying. The contagiousness of tonsillar infection is very obvious, for if the mother has infected tonsils, all the children of the family will be infected. If one child has them, you may be sure that all the others have also. Once the cocci are multiplying within the crypts, there is every likelihood of dental caries developing, as it is also streptococcal in origin. It is unknown when the cocci begin to enter the blood or lymphatic stream, but as soon as multiplication takes place within the crypts, antibodies and antitoxins will be produced and the phylactic properties of the blood and tissues will be raised against them, so that when the streptococci do gain an entrance, they are not likely to overwhelm the host, but are met with alert and well-organized forces. Some have maintained that this is the function of the tonsils and that normally they atrophy at about the age of twelve. Personally I am not in agreement with this, as observation has led me to the view that once a tonsil is a breeding ground for bacteria, it refuses to atrophy as long as they are present. This may go on even to old age. Once multiplication has become an established thing in the foci, a time comes when for various reasons the phylactic properties of the blood are unable to kill off the streptococci which gain entrance and it is then presumably on the mobilization of the phylactic properties of the tissue and other cells at the point of lodgement of streptococci that they are prevented from multiplying and so destroyed. Once this stage is reached there is nothing to prevent an uninterrupted stream of them entering the blood and drifting down to the tissues for which they have a specific elective affinity, as has been shown by Rosenow and others.

The points now to be considered are: Can we diagnose this condition of affairs or not? We certainly can if pain is produced or if there is swelling, but what about organs without sensory nerves hidden within the body. Let us picture to ourselves low-grade bacterial emboli lodging in the myocardium! Leucocytes and tissue cells will be mobilized around it, putting that small area temporarily out of action. On the destruction of the cocci the leucocytes and tissue cells return whence they came, leaving perhaps a minute fibrous scar at the site of the conflict. This process may go on for years and unquestionably does go on for a long time before anything is known of it, unless streptococci come in such countless numbers and lodge so thickly

together that the functions of a certain tissue or organ is interfered with. If we take an adult, forty years old, with mitral regurgitation and on examination find septic tonsils, it is obvious that those tonsils have been septic from childhood, for, if they were not so, they would have atrophied when he was fifteen years of age. It therefore follows he has had the infection for about twenty-five years, as once the tonsils are atrophied it is doubtful if they can become reinfected because of the obliteration of crypts. During this time streptococci have been entering his blood stream, lodging here and there, a large majority being attracted to his valves and myocardium, but still there will be many that lodge in other parts and wherever they lodge some damage is done, however small. Put such a patient on your couch and examine him! What means have we of assessing the damage done to his body? An examination of his heart reveals mitral incompetence. Tests for cardiac efficiency reveal a myocardium of poor quality. You can test his urine for albumin, bacilli and sugar and measure its specific gravity, but as Nature has provided us with about three times as much reserve forces as are necessary, it is only when an appalling amount of damage has been done that we are able to find it out. A man may have a third of his most important organs put out of action and may pass a searching examination and go away with the assurance that he is sound in wind and limb. Is this not a deplorable state of affairs?

Apply the same views to syphilis, about which we profess to know something. We have no means of diagnosing specific involvement of an organ until such damage is done as to impair its function or there is visible inflammation or swelling. We now have enough knowledge to institute treatment at once in syphilis and need not wait for lesions to appear. Surely it behoves us then with the knowledge we already have of the streptococcus to act in the same way as we do towards the spirochæte in regard to our attempts at its destruction. The fact that a great majority of mankind is already infected with the streptococcus does not minimize the evil. A search into any medical clinic will reveal that for every person with a spirochætal infection there will be a dozen incapacitated by the streptococcus. Associated with the streptococcus there are often other organisms which, acting in symbiosis, produce different symptoms. At present we cannot say to what extent these symptoms may be due to this factor. Because the process of destruction is slow and painless, we are apt to be misled as to its importance. In a case of chronic interstitial nephritis with high blood pressure, can we ascertain when the invasion of the kidney started? Can we determine when the spirochæte started to invade the aorta in aneurysm? Probably many years before the patient came for treatment! But we do not wait for it to develop before we start treatment.

Clinical evidence would suggest that a syphilitic may have many years of freedom from symptoms, but that does not say he is free from pathological changes taking place in his body. We must apply exactly the same reasoning to the streptococcus. As so few of our organs have a power of regeneration,

we can ill afford to have them destroyed piecemeal, however small the pieces. I have mentioned that there can be no tissue free from invasion as long as blood and lymph channels enter them. This is so with the spirochæte and the tubercle bacillus, but we know from clinical experience that some tissues having greater phylactic powers are not so readily damaged as others. The spirochæte takes strange fancies in different people; sometimes it has an affinity for bone, sometimes for nerves, brain, lungs, skin or any of the internal organs. In other words, it is said to have a selective affinity for certain tissues and does not invade the whole body equally. An organism which in past generations has been accustomed to grow in certain tissues, on gaining entrance to a new host will settle down in those same tissues. This may apply to the spirochæte as well as to the streptococcus. But with the spirochæte the disease is called syphilis, no matter what is invaded, whereas with the streptococcus a different name has been used for each organ involved. Symptoms of disease are produced by damage to the tissues or organs involved, often regardless of the type of invading organism. A myocardium invaded with the spirochæte will be clinically indistinguishable from one invaded by streptococci. This view of the streptococcus being able to invade any organ or tissue as the spirochæte can, must sooner or later be accepted. In the future, when we find an organ or tissue damaged, we must look for some such organism instead of trying to imagine all kinds of metabolic causes why this or that organ is not functioning properly or trying to find some new organisms when the streptococcus is capable of doing all the damage. You might argue that if this were so, the microscope would show it and we should be able to detect the bacteria in the tissues. The end result of bacteria is scar tissue. If this is extensive enough, it will be visible; if it is only a shred, it might easily pass unnoticed or it might be microscopical. It took many years of careful work to find the spirochæte *in situ*. When it lodges in the selected tissues, it is attacked and soon killed. Once the phylactic powers of the body begin to act on the organism, its staining properties are reduced and, as its life is short in these machean areas, there is little chance of culturing it. The peculiarity of streptococcal invasion in chronic diseases is that, having a walled city to multiply in, they send out raiders; these raiders fight and are destroyed. It is this process of destruction which constitutes inflammatory changes. If they were not destroyed, they would multiply in the invaded tissues, irrespective of fresh supplies coming, but as eradication of the breeding ground causes relief in the invaded tissues, one is bound to form the conclusion that they do not as a general rule multiply within these areas. Serous membranes are apt to become temporarily the site of focal infections, as in empyema, peritonitis and septic endocarditis. If the phylactic powers of the body fall too low, such conditions as malignant endocarditis and septicæmia develop, showing that the bacteria can lodge and breed anywhere within the body. Then the patient must die, unless we are able to supply sufficient antibodies to destroy the organism. It is quite possible in acute conditions

like rheumatic fever that there is a temporary multiplication within the joints. As illustrating this I will quote a few clinical conditions which may help to bear out these views.

A girl of eighteen came to me with kidney œdema. Her urine was very nearly solid on boiling. She had tonsils exuding pus; they were removed and within a fortnight all swelling had gone and only a trace of albumin was found in the urine.

A female of thirty-five sought aid for great cardiac distress which had come on within a few weeks. She had a rapid pulse and a profusion of extrasystoles. She had very active pyorrhœa. With a rapid improvement in the mouth conditions her heart within a few weeks returned almost to the normal, only an occasional extra-systole being heard.

A female, aged sixty-five years, suffering from chronic bronchitis and asthma, consulted me. She also had had diabetes; there was no sugar at the time. She had had facial paralysis. She had large patches of psoriasis over her body and limbs. A careful search revealed a post-nasal discharge of discoloured mucus, which had been present for some years, with blocking of the right side of her nose. These were the things I was able to find out. How much further damage to her tissues was there which I could not find out? Is it not more probable that the same organism produced all these lesions than that each was due to separate cause?

An adult male with a large quantity of sugar in his urine, with septic tonsils and antrum, underwent operation for the removal of his tonsils and a radical operation on his antrum. Within a few weeks there was no sugar in his urine and he was allowed a fairly liberal diet without the sugar reappearing.

An adult with a very acute arthritis of his wrist, with red, angry swelling of the whole hand, had active pyorrhœa. He obtained very slight relief under treatment. He was delayed for some reasons in getting teeth out, but within a few days of the extraction of the teeth rapid improvement and resolution of arthritis occurred.

Everybody who is working on these lines, must see such patients and they are an indication that in these infections the streptococci can only live and propagate within these defensive barriers.

Still there are odd cases which in spite of removal of visible focal infections do not respond satisfactorily to treatment. Are we then, because of this, to condemn the whole principle and say it is all wrong?

The principle and truth are so obvious in the majority that there must be a focus which has not been discovered or, if discovered, has not been completely removed, or, again, it may not be possible to remove it.

It is not a surprising thing to find that a person with infected tonsils has streptococci or other organisms in his faeces, even after complete removal of the tonsils. If so, where is the breeding ground? It is more likely to be within some recess of the intestinal wall than in the faeces itself. As the bowel is well supplied with lymphoid tissue, it is more than prob-

able that that is where we shall have to look for the hidden focus.

As to how far our ability goes to eradicate it, I am not prepared to say, but it does not look encouraging, for when it is not possible to remove the focal infection, one can only alleviate by vaccines.

I have just received a report of some work done in the Mayo Clinic, in which the writer states that pulp infection is often metastatic and not necessarily in dead teeth. He also lays emphasis on the fact that after the removal of a tooth a focus may still remain in the bone, even after curetting the tooth socket. In a series of cases of pyelo-nephritis and cystitis in which *Bacillus coli* only were found, they isolated a green streptococcus from the pulp of teeth, which when injected into rabbits invariably produced kidney and bladder lesions.

Invasion causes mobilization of tissue cells and leucocytes. It is this crowding which temporarily puts areas of tissues out of action and not so much the direct damage by the streptococcus. As soon as the streptococci are killed off and no fresh ones arrive, demobilization takes place with a resumption of function of the parts invaded. Under these conditions it is obvious that it will be a difficult matter to isolate and cultivate organisms from these areas. Without going through a list of diseases which probably owe their cause to this source, but always bearing in mind that we know of no tissues to be immune, I will mention a few. Syphilis is often associated with gross anæmia. Here the question arises, is it due to action of a toxin within the blood or direct invasion of certain blood cell producing tissues? Against the toxin action we have these points. It is only in certain cases of syphilis that this anæmia exists and, when it does, it is usually very pronounced. Have we any reason to assume that the bone marrow is immune from spirochætal invasion? We frequently get very gross anæmia with septic foci, which shows all the signs usually associated with pernicious anæmia. In this case as in syphilis it is more likely that the red blood cell producing tissues have been invaded by some organism than that it is due to a hæmolytic action on the red cells themselves. The result of transfusion in these cases bears this out, as the red cells are not destroyed before their period of existence would naturally be expected to end. We do get occasionally an acute infection of bone marrow in acute osteo-myelitis. We then must also recognize the possibility, nay, rather, we must say that the occasional invasion both of white and red bone marrow by a low-grade streptococcus must be almost a certainty. The fact that combined sclerosis is often associated with pernicious anæmia is rather in favour of an organism having an elective affinity for red cell producing tissues, as well as certain tracts of the cord, as we see the same thing happening in joints and heart, rheumatism and chorea, rheumatism and psoriasis, etc.. Invasion of the bone marrow with destruction of the red cell producing tissues, plus invasion of the liver and spleen, with irritation and over-growth, give the picture of myelogenous leuchæmia. Invasion and irritation of the lymphocyte producing tissues give a corresponding picture of lymphatic leuchæmia. Consider-

ing the question of lymphatic glands, at times both syphilis and tuberculosis have an affinity for them, particularly in the second stages of syphilis. It is not stretching the imagination too far to assume that the streptococcus has the same affinity; if so, what would be the result? Irritation, hyperplasia and deposit of fibrous tissue. We know that some tissues have the power of renewal, such as the thyroid, liver, etc., and not only renewal but renewal in excess. If such tissues become invaded, there will be over-growth and when is that over-growth going to stop, particularly if it starts in such tissues as lymphatic glands?

In the ordinary state of affairs, lymphatic glands undergo hyperplasia when there is some infection of the area which they drain. With the removal of the infective process, the gland resolves. Picture the condition of an organism able to live within lymphatic glands and multiply there, setting up hyperplasia and not being sufficiently toxic to destroy the host by liberated toxins! Is this not what we call lymphadenoma?

In dealing with goitre I have long held the toxic view, but now I also hold that in many there is direct invasion. Rupert Farrant some years ago produced goitre by injection of bacterial toxins of various kinds. Many of the milder degrees of goitre are undoubtedly due to this factor, as they respond so quickly to removal of a focal infection; but there are others which require more active treatment and it is in these we probably have direct invasion, producing irritation, fibrosis and over-growth, an over-growth which often reaches enormous dimensions.

I have never seen a single thyroid gland enlarge after a complete removal of a septic focus, yet I frequently see goitres on which several operations have to be performed, because of recurrence when the focal infection has not been removed. I have on several occasions seen an exophthalmic goitre flare up again because a small piece of tonsil has been overlooked in the removal. So far, then, we have been led to think that the streptococcus does not propagate anywhere but in focal infections, except in conditions like malignant endocarditis and septicæmia, which means that the phylactic powers of the body have been exhausted and death is the result. In these conditions the organism is usually very virulent.

If we consider the arterial diseases, taking syphilis again as an object lesson, we find definite gummatous invasion resulting in aneurysm, *endarteritis obliterans*. Direct spirochæte invasion is obvious in the first and I believe generally accepted in the second. To other types of atheroma we must at least concede the possibility of direct invasion of vessel walls, as well as the possibility of bacterial toxins acting on certain constituents of the walls. The great muscular hypertrophy in obliterating arteritis is very closely allied to the fibroid uterus. Are veins immune from direct invasion? The very fact that a section of a vein becomes varicose, whilst those parts above and below which are subject to the same strains, are sound, is enough to suggest that something was wrong with that section of the vein and that it was not due to over-stretching of the vein *per se*. Thrombosis taking place within the

varix is also in favour of infectivity of varicose veins. It matters not what diseased tissues of the body one thinks over carefully, the possibility of streptococcal invasion must come prominently before one's mind, even down to flat feet and painful heels. I have a case of *lupus erythematosus* now under treatment of seven years' standing which has been treated unavailingly, yet on the removal of infected tonsils and a vaccine from them the disease is clearing up steadily. Yet in such cases one must bear in mind the possibility of the area involved becoming itself a focal infection. Another case, one of psoriasis and arthritis, with the removal of tonsils and vaccine is showing rapid improvement with no local treatment to the psoriasis.

Must we not then class the streptococcus in the same category as *Spirochæta pallida* and the tubercle bacillus, but at the same time realize that it produces ten times as much sickness, disability and death as either? When fully grasped, the magnitude of this disease is staggering. What shall be its name? This world-wide scourge, which has involved almost the whole of mankind in some way or another and fills our hospitals with its victims. Having once realized the situation, the natural question arises: What can be done to obliterate it? Is it possible to do so? If it is, then one of the biggest blessings that have ever been conferred on mankind, will have been accomplished. It is by discovering the habits of organisms that diseases in the past have been dealt with and in many instances been almost obliterated. In dealing with the matter it is by reasoning out the habits of the streptococcus in the body that the solution of the question becomes apparent and a way out is seen. The streptococcus cannot live in the body except in walled cities, if the patient is going to live. It is on this point that the crux of the whole question turns. If you can eradicate these walled cities, all is well. If not, there is very little to be done. These walled cities are the focal infections we all know of and at least eight out of every ten are capable of being completely eradicated. In the face of this, is it reasonable to leave a walled city until damage is already manifest? With what would you fill your hospitals, except with tuberculosis and syphilis and a few other things, if all these focal infections were removed. As six-tenths at least are due either to tonsils or infections associated with teeth and are easily dealt with, this, the greatest scourge of mankind, can be overcome with far more gratifying results than we can ever hope to attain in dealing with tuberculosis or syphilis. Forty-one of every hundred people seeking medical treatment at St. Vincent's Hospital Out-Patient Department showed infected tonsils. If those people had had their septic tonsils removed as children, they would never have had to come to hospital with damaged hearts, kidneys, etc., to seek relief and their children would not run the risk of developing the same complaints.

Of this number, 21% or about one-fifth, seek treatment of diseases because they have had pyorrhœa or root abscesses. If there are two things certain, they are that tonsils can be removed completely and pyorrhœa cured in the majority of cases by removal of teeth or otherwise. By attending to

children's throats early and by education in mouth hygiene a reduction of sickness by 62% can be brought about in the community. Is there any branch in preventive medicine which can do so much for the welfare of the people and can accomplish so much with such a comparatively small effort when compared with that expended upon the eradication and prevention of tuberculosis and syphilis? The actual work in stamping out the scourge is in the hands of the rhinologist and dentist. It is essential that the rhinologist must clearly realize that incomplete removal of tonsils is useless as a curative process. A piece the size of a pea can be the breeding ground of enough streptococci to do untold damage. Infected prostates, gall bladders, etc., are more difficult to deal with. Infected appendices will often return to normal on removal of an infected focus.

In summing up, we have to consider streptococcus infection in the same light as we do that of syphilis or tuberculosis. It is responsible for 70% of the sickness in temperate zones. It is capable of involving all tissues of the body which have blood or lymphatic channels entering them. With these views established we shall have to recast our ideas as to the origin of many diseases, such as pernicious anæmia, disseminated sclerosis, diabetes, psoriasis, *lupus erythematosus*, certain forms of epilepsy, possibly innocent and malignant over-growth and many others, looking upon them all as invasion of certain tissues by a low-grade organism capable of cure by removal of the breeding grounds of that organism, provided that enough tissue is left for that organ or tissue to function properly. The streptococcus is capable of fulfilling the rôle.

THE NORMAL GASTRIC CYCLE.

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In this paper I propose to discuss briefly certain factors entering into normal gastric digestion, more particularly those connected with the acid level at different times during the gastric cycle. A knowledge of the points is necessary for the understanding of certain aspects of dyspepsia and allied conditions which I hope to deal with later.

Since the introduction of the fractional test meal method of gastric analysis, a method I have been using for some months at the Melbourne Hospital, many points requiring explanation have appeared for which the text-books give no adequate explanation or they ignore them altogether.

A typical curve as obtained from a normal person by the fractional method is shown in Figure I. A small sample of test meal is drawn off every quarter of an hour by means of the Rehfuß tube (a length of fine rubber catheter tubing attached to a small perforated metal bulb measuring 8×16 millimetres). In each sample are determined (i.) the total acid and free hydrochloric acid, (ii.) the relative amounts of food and clear fluid above it after

the former has settled, (iii.) the presence of starch, bile, mucus and blood, (iv.) in certain cases a microscopical examination of residue is made. The results are plotted as shown in the figure.

This shows, then, that the acidity rises steadily for one to one and a quarter hours and then slowly or suddenly drops away until it reaches the fasting level. The curve showing the heights of the food residue in each tube and the iodine test for starch, show that the stomach empties in one and a half to two hours with the test meal used (thin gruel). Soon after the drop in acidity, bile commonly appears in the samples. Mucus is very slight. Blood and much mucus are, of course, pathological.

Curves made in this way from cases of different kinds of dyspepsia vary widely in every way and my experience confirms what others have found, that there is hardly any such thing as a chart typical of any particular disease. Each chart must be interpreted in its own way and hence a knowledge of the working of the various factors affecting the stomach, normal and pathological, is absolutely necessary.

I propose here to deal only with some of the normal physiological factors which go to produce the curve in Figure I. The pathological factors must be deferred for the present.

These normal factors are the acid of the gastric juice, the mechanism of the pylorus, duodenal regurgitation and the factors determining the acid strength.

The Acid of the Gastric Juice.

The normal strength of hydrochloric acid in pure human gastric juice lies between 0.35% and 0.55%, but, owing to the fact that in mixing with food part of it is converted into chlorides of metals, part becomes united to proteins as acid-metaprotein and the rest diluted, the strength of free hydrochloric acid in the gastric contents is considerably below these limits and at the height of its strength, which occurs usually about one to one and a quarter hours after food, the percentage of free hydrochloric acid in the mixture is generally from 0.1% to 0.2%.

Now this normal figure for free acid, which we may call 0.18%, is the result of a number of interacting and interdependent factors which are in health so beautifully balanced as to produce usually a close approximation to this figure, so that, within limits, shortcomings of one factor are compensated for by others. The level of gastric acidity, therefore, tends to remain a constant, which is the optimum for peptic action. But at times this mechanism fails, with the result that a new level of acidity is reached—higher or lower.

In most physiological processes the limits of normality are wide—a point not sufficiently impressed on students—and it is difficult to say when the acidity level becomes pathological. The point 0.25% is generally regarded as the lower limit of hyperacidity. As it is very doubtful if any secretion of gastric juice, physiological or pathological, ever has an increased strength of hydrochloric acid, it follows that hyperacidity must be the result of a disproportionately large amount of unneutralized

gastric juice mixed with the food in the stomach. For the same reason hyperacidity can never exceed the strength of 0.55% of free acid or indeed ever reach it while food remains in the stomach. Occasionally secretion goes on after this food has left the stomach.

Normally the secretion of gastric juice is determined by two factors:

1. **Psychic influence.** Responsible for the greater part of the gastric juice.

2. **Gastrin.** A hormone formed in the gastric mucous membrane as the result of the action of the first products of digestion, which are absorbed into the mucosa of the pyloric vestibule. This gastrin is then absorbed into the blood and stimulates the glands of the fundus to activity, producing the later and smaller part of the gastric juice.

The Mechanism of the Pylorus.

One of the first things to note is that Cannon's law of acid and alkali control of the pylorus does not hold in man, however true it may be for cats.

Referring to Figure I., we see that free acid does not appear till some time between a quarter and a half hour, yet X-ray work shows, when the same meal to which a little bismuth has been added is used, that the stomach begins to empty in from three to ten minutes, *id est*, some time before any free hydrochloric acid could possibly be present. The mechanism is much more complex and is certainly not clearly understood. Barclay⁽¹⁾ has shown radiographically that it is by no means always in those cases in which acidity is high that the pylorus opens readily, but in those cases in which the duodenum is "irritated" or in some abnormal condition. Distension of the duodenum rather tends to close the pylorus, especially if there is no food in the stomach, but not so or only for a very short time when there is much food in the stomach. Food in the duodenum seems to stimulate the stream from the stomach. Apparently, Barclay says, the pylorus

is controlled by some sensory mechanism in the duodenum and an "irritable" state of this part of the gut (intrinsic or reflex) tends to abnormal relaxation.

Lately two American observers, McClure and Reynolds,⁽²⁾ have confirmed this difference in the human subject by working with a duodenal tube and introducing acid or alkali. The effects were then watched with the aid of X-rays. All foods commenced to leave the stomach within three to ten minutes and hydrochloric acid placed in the duodenum had no effect on the sphincter.

The best way to look on pyloric function appears to be to regard it as preventing the entrance into the duodenum of unsuitable food, whether of consistence, acidity, alkalinity or quantity. Any acidity or alkalinity above 0.1% to 0.15% is harmful and therefore such contents are retained in the stomach until fit for passage into the duodenum. The mechanism of reducing acidity will be dealt with in the next section.

The regulation then appears to be by a reflex nervous mechanism stimulated by the type of food that first enters the duodenum.

The pressure or tension above and below the sphincter would also appear to be a large factor or we may regard it as part of the preceding. The sphincter obeys the general "law of the intestine." Thus a rise of tension above the sphincter (stomach) tends to open the sphincter, *exempli gratia*, pleasant psychological stimuli tend to empty the stomach much more readily than otherwise. On the other hand, injection of food direct into the duodenum or distension of the duodenum, by raising local tension, will close the pylorus for ten to fifteen minutes, but if the stomach is full, it either does not close it or only for one or two minutes.⁽³⁾ Hence it is largely a matter of balance between the tensions above and below the pylorus.

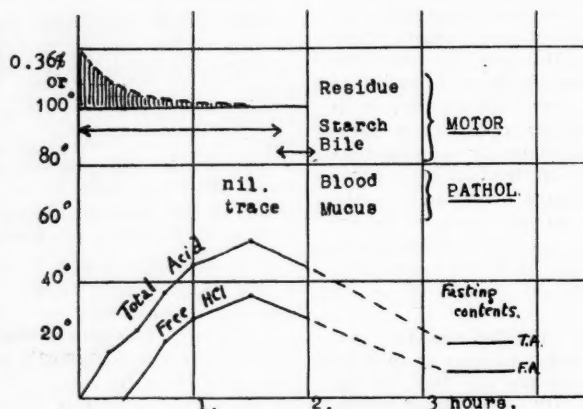


FIGURE I.
Normal Curve, average of eight healthy Melbourne medical students. One degree = 0.00365% hydrochloric acid.

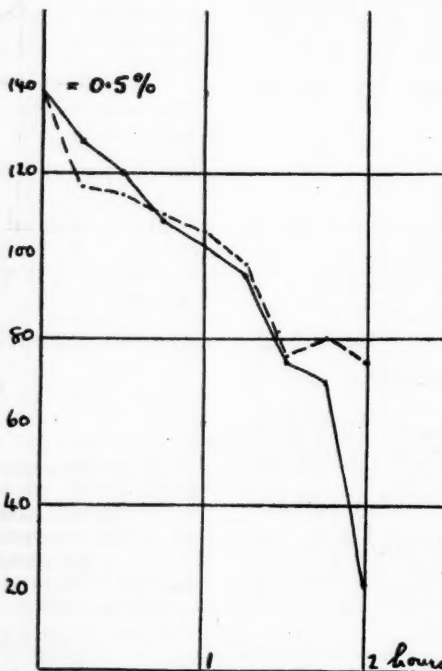


FIGURE II.
Showing Fall in Acidity after Injecting 150 Cubic Centimetres of 0.5% Hydrochloric Acid in Dog's Stomach. (Two experiments.)

Duodenal Regurgitation.

If the only two factors governing gastric acidity were the secretion of juice and gastric emptying, then we would expect the gastric curve to mount up steadily till emptying occurred or till secretion ceased, when the curve would become a level plateau till the stomach emptied. We find, however, that the curve falls; sometimes even deep "dips" occur in the course of the curve (see Figure III.), *id est*, dilution or neutralization has occurred at these points. This can only come about by the regurgitation of alkaline duodenal contents, the chief of these being the pancreatic juice, which is ten times as alkaline as bile or *succus entericus*. The phenomenon is apparently due to the raising of duodenal and jejunal tone by the entry of food into it, with a coincident lowering of gastric tone with gastric emptying. It is often indicated by the presence of bile, as in Figure I., but not always.

The importance of this regurgitation is not generally recognized, yet it is the normal way by which the body regulates the acidity of the gastric juice to the optimum for that person. Figure II. is a chart from one of my experiments in which, by means of the Rehfuß tube, 150 cubic centimetres of 0.5% hydrochloric acid were injected into a dog's stomach. Within two hours that acidity has been reduced to a level fit to enter the duodenum. This then appears to be the natural way of overcoming hypersecretion of gastric juice and I would submit that hyperacidity is really a failure of this neutralization apparatus, *id est*, a failure of the pancreas to produce pancreatic juice or a failure of this juice to enter the stomach.

The natural cure of hyperchlorhydria then may fail on account of:

(1) Defective formation of pancreatic juice owing to faults in the duodenal mucosa, with inability to form pro-secrelin, to disease of pancreatic cells and ducts, to deficient blood supply or to deficient alkali in the blood.

(2) Inability of the pancreatic juice to enter the stomach owing to pyloric closure, *exempli gratia*, in gastric ulcer, certain organic stenoses, over-rapid evacuation, *exempli gratia*, in duodenal ulcer and the reflex hyperchlorhydrias, obstruction between the ampulla of Vater and the pylorus.

Two of my own observations are of interest in this connexion. In cases of *diabetes mellitus* a strong pyloric closure occurs, leading to a heaping up of hydrochloric acid and with normal secretion a late hyperchlorhydria. There appears to be an over-irritable closure reflex elicited by the first entry of food into the duodenum. This over-irritability of

the mucosa may account for the observation of Bennett and Dodds⁽⁵⁾ that in diabetes there is a great over-secretion of pancreatic juice, which can be abolished by the application of atropine to the duodenal mucosa.

Injection of a toxic solution into dogs reduces pancreatic outflow to a very small proportion of its normal outflow and thus might be the cause of the hyperchlorhydria noted in many dyspeptics with focal infections.

I hope to go into the significance of these two observations more fully at another time.

The Factors Determining the Acid Strength at Any One Moment.

From the foregoing it is obvious that we can represent the acidity at any one moment by a mathematical formula.

Let a = volume of test meal (400 cubic centimetres in the test meals as used by me at the Melbourne Hospital).

Let b = volume of gastric secretion, with hydrochloric acid strength = x .

Let c = volume of chyme, of average hydrochloric acid strength = z , which has been lost through the pylorus during the same period. (This rises from 0 to 20 to 30 degrees in the first hour in many cases.)

Let d = volume of regurgitated alkaline duodenal juices, of alkalinity strength = w (which normally enters the stomach only after about one to one and a quarter hours).

Now the total acid in the stomach = $bx - cz - dw$ and the total volume of the gastric contents = $a + b - c + d$.

Therefore, the strength of acid (M) in the mixture is

$$\frac{bx - cz - dw}{a + b - c + d}$$

From this it can be seen that, other things remaining constant, M becomes greater with increase of b or c , M becomes less with increase of a or d , or, in words, the acidity of the gastric contents, other things being equal, is raised by hypersecretion or hypermotility and lowered by regurgitation of duodenal contents.

It might at first sight be thought that over-rapid emptying of the stomach would lead to a fall in gastric acidity, but as I hope to show more fully at another time, it actually causes a rise in many cases, acting in a twofold way. Conversely, omission of c (retention of gastric contents) really tends to lead to a lessened acidity in a given time, *id est*, it takes a longer time for acidity to rise to its normal level and any hyperacidity resulting

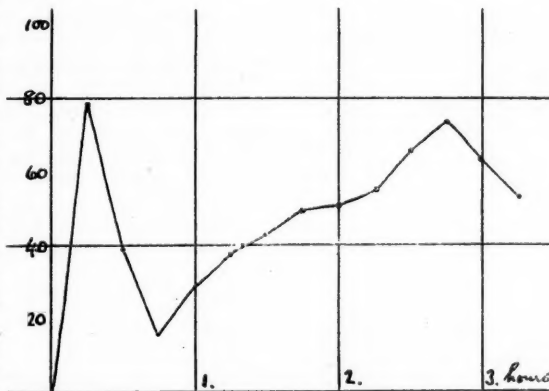


FIGURE III.
From Case of Diabetic Gangrene under Mr. Newton, to show alkaline regurgitation after a quarter of an hour. Total acid only plotted.

from gastric obstruction must be a late hyperacidity.

Lastly, it should be remarked that, though I have treated the stomach here as if it were a separate organ, it should always be borne in mind that it is really only part of an organ—the whole gastrointestinal tract—and that variations in the stomach are really part of the variations in the whole tract. This is particularly important in diagnosis and treatment. We cannot properly treat the stomach alone. In the diagnosis of cases with gastric symptoms we should examine every part of the tract from end to end and treat the case accordingly. As Alvarez⁽⁴⁾ remarks: "The symptoms often indicate the fire alarm and not the fire."

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⁽¹⁾ Barclay: "The Alimentary Tract: A Radiographic Study," page 52.

⁽²⁾ McClure, C. W., and Reynolds, L.: *American Journal of Roentgenology*, April, 1921 (Abstract in *THE MEDICAL JOURNAL OF AUSTRALIA*, October 29, 1921, page 385).

⁽³⁾ Alvarez: *The Journal of the American Medical Association*, July 31, 1915, page 388.

⁽⁴⁾ Alvarez: *Ibidem*, page 393.

⁽⁵⁾ Bennett and Dodds: *The British Medical Journal*, January 7, 1922, page 9.

MYXEDEMATOUS DYSPIUITARISM.

By J. P. HASTINGS, M.D.,
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ACCORDING to Starling⁽¹⁾ the pituitary body consists of two parts. The buccal ectoderm gives rise to the anterior part, while the neural epiblast becomes developed into the posterior lobe. The anterior lobe is separated from the posterior lobe by a cleft. The pituitary tissue immediately surrounding this cleft differs somewhat from that constituting the anterior lobe. The cells are arranged in islets separated by an intervening tissue continuous with the main mass of the posterior lobe. Many of the islets are hollow and enclose a colloid material. The amount of colloid material increases in animals which have undergone extirpation of the thyroid gland.

Pierre Marie was the first to observe that acromegaly is associated with tumours of the pituitary gland.

This disease consists in increased growth of certain parts of the skeleton, especially the lower jaw and the extremities of the limbs. Headache is often present and there may be polyuria and affection of the eyesight.

Most of the giants are examples of the pathological conditions of "gigantism," probably due to overaction of the gland.

In acromegaly the tumour is usually an adenoma. In this disease it is always the anterior lobe which is hypertrophied. Much further work is necessary before we can regard the functions of the pituitary body as definitely ascertained.

As far as our present knowledge goes, it will appear that (a) the anterior lobe furnishes some substance to the circulation which promotes growth, especially of bone and connective tissue; (b) the

intermediate part (surrounding the cleft) excites unstriated muscle, produces diuresis and also furnishes a colloid secretion which passes directly into the ventricles of the brains and may be assumed to have some influence on the growth or functions of the central nerve system. We have no clue to the functions of the posterior lobe, according to Starling. Yet, according to Bainbridge and Menzies,⁽²⁾ the posterior lobe plays a part in the metabolism of carbo-hydrates. Apparently Starling holds that this function of the posterior lobe is due to the masses of intermediate cells which it may contain.

Diseases of the Pituitary Body.

According to Osier,⁽³⁾ cases occur in which the neighbourhood manifestations are absent or slight, though the glandular symptoms are unmistakable. The gland is not so large as to cause regional symptoms. There are skeletal changes on the side of overgrowth and undergrowth. Disturbance of carbohydrate metabolism is a matter of modified posterior lobe activity, whether occurring as a lowering of the assimilation limit, which is often associated with the early stages of acromegaly or a great increase in tolerance, such as characterizes all grades of hypopituitarism. In posterior lobe insufficiency there are a tendency to the deposition of fat, a subnormal temperature, drowsiness, slow pulse, dry skin, loss of hair and an extraordinary high tolerance for sugars. Most of the cases of acromegaly fall into this group and show at first evidence of hyperpituitarism and later of insufficiency. In the adult adiposity, high sugar tolerance, subnormal temperature, psychic manifestations and sexual infantilism of the reversive type indicate hypopituitarism and may exist without the regional symptoms of tumour (Cushing).

It is interesting for a moment to compare the class of cases as outlined above with the symptoms exhibited in myxedema or Gull's disease. This condition is characterized by a marked increase in the general bulk of the body, a firm, inelastic swelling of the face, which does not pit on pressure, dryness and roughness which tend with the swelling to obliterate the lines of expression in the face, imperfect nutrition of the hair, local tumefaction of the skin and subcutaneous tissues, especially in the supra-clavicular region. The features are coarse and broad, the lips thick, the nostrils broad and thick and the mouth enlarged. Over the cheeks there is a reddish patch. There is striking slowness of thought and of movement. The memory becomes defective; the patients grow irritable and suspicious. There may be delusions and hallucinations. These patients, when treated with thyroid gland extract, do remarkably well. It will be seen that there is a remarkable similarity in the clinical features of these two conditions, i.e., myxedema and some case of disease of the pituitary body. The differential diagnosis may not be at all an easy one. Of course, the radiologist furnishes invaluable help with the skiagram, which shows enlargement of the *sella turcica*.

It must not be forgotten that in some cases of myxedema there is some widening of the *sella turcica*. It is well known that the ductless glands

are closely related in their several functions. The importance of these glands in the metabolism of the body is recognized by the medical profession more clearly to-day than ever before. Yet we are still in the dark as to the full significance of the endocrines.

I am of the opinion that the relationship between myxœdema and affections of the pituitary body is much closer than has yet been realized by most of us. I would venture to call these two conditions possibly brother and sister or at least first cousins. It is evident that the thyroid and pituitary body are closely related and that the good health of the body requires efficient team work on the part of these two ductless glands.

History of a Case.

It might be of some interest if I now narrated the history of a patient, Miss C., who recently came under my care. Her case illustrates the close correlation between the thyroid and pituitary glands. The patient is forty-five years of age. She enjoyed good health up to the age of seventeen years, when she was troubled with goitre. She was treated for this by the late Dr. Hayes. As the result of this treatment the goitre almost completely disappeared. When she reached the age of twenty-four the goitre again began to grow and eventually was removed in February, 1915. She made a good recovery from the operation and remained well until February, 1920. She then became depressed and worried. She was troubled with a delusion which will be mentioned later. In June, 1920, she was sent to a mental hospital. As this time her weight was 63.5 kilograms (about 140 pounds). She remained there till December, 1921. Her weight was then 105 kilograms (234 pounds).

When I saw the patient in December, 1921, both she and her friends assured me that her jaw, hands and feet had enlarged noticeably in the previous two years. I observed at times a reddish patch over her cheeks and nose. I was most impressed by her bulk—a mountain of flesh does not seem an inappropriate term as applied to her condition. She was troubled by a curious delusion that some strange living thing was growing inside her abdomen. She was afraid it might be "anti-christ." This delusion was firmly fixed in her mind. As shown in the photograph, her features were heavy and thick. Her hands were spade-like and the lines on her palms much deepened. Her face as a whole was elongated and enlarged.

She was examined in conjunction with me by Dr. Moodie, Dunedin. We found the uterus very small—infantile type. Her menstrual flow was scanty and irregular. Her memory for recent and past events was excellent; she was depressed, but answered questions quite readily. Dr. Talbot examined her eyes. There was no evidence of hemianopsia.

I came to the conclusion that the case was one the proper description of which required the coining of a new phraseology. I think she represents a type of disease which has not previously been clearly defined. I have, therefore, ventured to define her disease as myxœdematous dyspituitarism.

My explanation of the condition present is that, following the thyroidectomy in 1915, a myxœdematous condition

set up. This induced a synergetic action on the part of the pituitary body which, as shown by a skiagram taken by Dr. Cameron, Dunedin, has definitely enlarged.

How far her symptoms were definitely due to the operative myxœdema or to the dyspituitarism would, I fancy, be difficult to determine. It is possible that for a year or two following the thyroidectomy the synergetic action of the pituitary body prevented the development of the myxœdematous symptoms. Then the hyperpituitarism was followed by hypofunction and thus we have produced a clinical phenomenon which is best described as myxœdematous dyspituitarism.

Treatment.

For about one month I tried her on thyroid gland without benefit. I then made an osteoplastic flap in the frontal region, horseshoe shaped, 6.25 centimetres high and 6.25 centimetres wide. The anæsthetic was given by Dr. Milne. In opening the skull, the *dura mater* was accidentally opened at one point. The *dura* bulged into the opening made—a suspicious sign of tumour.

This operation was done on January 23, 1922. The patient gave no trouble after the operation. She began to feel brighter day by day. Two weeks after the operation her delusions had completely left her. I had originally intended to do the second stage of the operation about sixteen days after the first stage.

However, she has improved so much that I am again putting her on the thyroid gland and will gradually increase the dosage till she is taking one gramme (fifteen grains) of thyroid gland extract daily, of course, keeping her under close observation. The osteoplastic flap operation relieved the intracranial pressure. It remains to be seen if the thyroid gland therapy will bring about a cure without having to resort to the second operation on the pituitary body.

In September, 1922, the patient was well and was engaged in teaching music.

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- (1) Starling: "Principles of Human Physiology," 1920.
- (2) Bainbridge and Menzies: "Essentials of Physiology," 1919.

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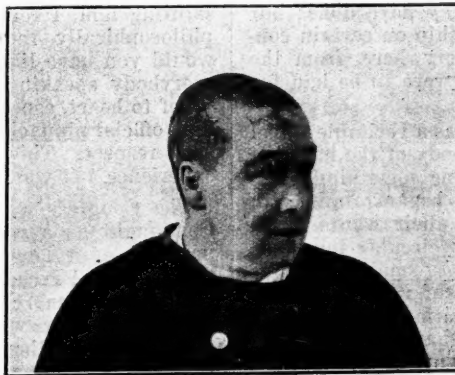
A FAMOUS CONGRESS.

By E. H. BINNEY, M.B., CH.M.,
Sydney.

It may seem like ancient history to write about what happened nine years ago, especially as in this case the details have been carefully recorded in the journals of the time.

Much water has flowed under the bridge since then and our minds have been diverted from such matters. Perhaps it is now not inopportune to revive the past.

The year 1913 was a memorable one for medicine in London, for it was in that city that the International Medical Congress with all its attractions was held.



REPRODUCTION OF A PHOTOGRAPH TAKEN FIVE DAYS AFTER THE OPERATION.

The outline of the incision can be seen.

London is unique; so much may happen and events come and go without any notice. Such small matters as the visit of a foreign potentate or ambassador are daily happenings. The matter of arrangements for receptions, erection overnight of Venetian poles with banners and streamers, the performances of bands are noticed by only a comparative few unless accompanied by the presence of Royalty. The ordinary visitor to London for a summer season hopes the weather will be fine for the Derby and Ascot. Such matters as weather are not likely to affect the material work of a congress, however much its social side may suffer.

The summer of 1913 in England was the best that had been known for years and attracted a large number to the great metropolis and through its international character the Congress had been well advertised. The writer, in fact, entered as a member before leaving Sydney. The headquarters were at the Albert Hall and here one was obliged to attend to go through the necessary formalities of having identity established and securing cards of admission to various sections and some entertainments. It was thought at first that the scientific side should predominate. It may have done; but ladies were admitted to membership on certain conditions and invitation cards everywhere, from the Royal purple-edged downwards, were to be had for the asking.

The scene at the Albert Hall was a veritable Babel of many tongues. In the main body of the building was collected a crowd, all wanting something. Numerous improvised Cook's guides began to mix with the throng, trying to ascertain their wants. The boxes around the hall, which is circular in shape, were temporarily transformed into small offices for officials and for representatives of various nationalities interested. The chief position was taken by Doctor (now Sir) W. P. Herringham, the Honorary Secretary, and when his tall figure rose, with his good-natured smile, the effect was magnetic and a centripetal human current established itself in his direction. This was lessened and diverted to a certain extent through the efforts of the interpreters, who in time established queues to their respective bureaux, but the largest and heaviest queue had made the Secretary's office its objective.

A card of identity had to be obtained, a coloured badge to indicate your nationality, one or more indicating the language or languages you spoke and a bronze medal with Lord Lister on the obverse was struck to be worn by members and the picture was complete.

Such was the state of things for some days before the Congress opened and daily some new contingent of members would arrive, *char-à-banc* loads from Spain or Portugal, batches of Canadians or Americans and other oversea visitors. In course of time and with much difficulty cards for the various sections with all particulars stated were issued and also—a most important matter—the social events were arranged.

An amusing incident occurred here. A sallow youth from "over the herring pond" had duly enrolled and had collected the maximum of invita-

tions and, viewing the stack of cards with the remark, "This is sure some town," he proceeded to inform his intimates of the relative worth of these various "pasteboards," as, in many cases the dates coincided, they could not all be used. Taking an invitation to an evening entertainment given by the Grocers' Company at the Grocers' Hall, he at once discarded it with the words: "Say, I did not come here to be fed up on samples. This had better go to the pack." I met this gentleman afterwards and would very much have liked to have told him how I had enjoyed the refined entertainment in their classic hall ornamented with carvings, to be followed by a supper of excellent viands and wines ending with dessert of choicest in and out of season fruits served on gold plate. But I collected no samples!

Each member was of some importance, great or small, in his own country, but nobody knew it and here there was nothing to do but "simply stand and wait" until one's proper turn came. It was while waiting in one of these queues, not very patiently, that I noticed my neighbour, the late Dr. Ashburton Thompson, waiting with the utmost patience. After saluting him, I remarked on the confusion and he philosophically replied: "This is nothing. How would you have liked to have been at Lisbon with everybody speaking Portuguese!" I took this reproof to heart, especially as it came from one whose high official pinnacle in my own country commanded such respect. This was not his first international experience. It was mine.

The Congress was opened by Prince Arthur of Connaught as a representative of Royalty in the presence of a large and mixed gathering. There was a mutual exchange of international salutations in speeches of more or less picturesque oratory. Sir Thomas Barlow was the medical President and, owing to the audience having thinned down by now, I was able to secure a closer seat. I heard in his closing remarks an injunction to physicians and surgeons to "bury the hatchet" of jealousy for ever.

Dr. Harvey Cushing gave an address on surgery, to which I listened from a seat next to my old friend and colleague, Dr. William Chisholm. The address was a learned one and in the course of his remarks mention was made of two oceans being caused to meet in the Panama zone, hitherto uninhabitable, through the efforts of Surgeon-General Gorgas, of the United States Army. Of the special addresses given, one on salvarsan was given by the late Professor Ehrlich. He was an honoured guest of the Congress and afterwards was one of a little band of "intellectuals" who "said things." I could not follow all he said in his address, but I did not catch any saying like those of the President about "burying the hatchet."

The work of the sections was of special interest and occurred in different parts of London in the morning. In the afternoons visits were made to hospitals and at nights the gatherings were purely social. Certain whole-day events, embracing visits to such places of interest as Bath, Oxford and Stratford-on-Avon, were arranged after the work of the Congress was finished. The Section of Children's

Disease met at the rooms of the Royal Society of Medicine in Wigmore Street, under the presidency of the late Dr. Eustace Smith, who opened the work of the section with a short address in which he warned those present against being carried away by modern new ideas to the neglect of old-established methods that have stood the test of time. To those of us who had read as a text-book the large, green-covered treatise on "Diseases of Children" and the smaller monograph on "Wasting Diseases of Children," the remarks were significant, because, however useful and practical these volumes were, the absence of pathology and the disinclination to theorize on obscure matters were marked features.

These presidential remarks having been made, the section proceeded to investigate and discuss all the most modern ideas on the methods of treatment of the diseases of infancy and childhood.

There was a brilliant assemblage. Amongst those present were Sir Arbuthnot Lane, Sir Harold Stiles, Drs. Hutchinson, Still, Collier, Messrs. Corner, Sargent, Dr. Koplik, Professors von Pirquet and Kirmiston, together with many other British, foreign and American celebrities.

I listened to all the words of wisdom and after listening to a learned continental professor on the advantage of the seaside in certain cases, I ventured (with apologies) to speak of the climate of the Antipodes in general and Sydney in particular. I only mention this as it bears on what follows, which struck me as interesting at the time. At the close of the session I had the privilege of being introduced to the President and, in greeting me, he said: "I heard you speak of Sydney. One of my fellow students at University College went out there, Sydney Jones. Did he do any good?" I was glad to tell him of his old fellow student's brilliant career and high position in New South Wales; that he was hale and well, that he had been honoured with a knighthood for his services to humanity. "Ah, well! Remember me to him!" I was glad to be able to deliver personally to the late Sir Philip Dr. Eustace Smith's message. "Ah!" said Sir Philip, "I believe we are the only two living members of our year."

In the afternoon clinical demonstrations were given at Great Ormond Street, the Evelina and other children's hospitals and excursions were arranged to such places as Alton Home for Cripples in Surrey and for those who could afford the time to Hayling Island, on the Sussex Coast, where Sir William Treloar had established a seaside home for sick children who especially needed fresh air and sunlight.

The doings of other sections interested the writer, but, of course, nobody could avail himself of all the material presented. Professor McEwan, of Glasgow, spoke on bone development and regeneration. Dr. Albee, of New York, demonstrated his operation of bone transplantation for spinal curvature cases. Dr. Abbott demonstrated his method and appliances for the forcible correction of scoliosis and the orthopaedic demonstrations of Sir (then Dr.) Robert Jones were most attractive.

Reports of Cases.

PATENT FORAMEN OVALE.

By C. JOYCE, M.B.,
Pinjarra, Western Australia.

THE occurrence of two cases of patent *foramen ovale* in a ward containing three beds is rather remarkable. The other unusual conditions found make them seem to me worth recording.

I was called to W.J.W., *atatis* six months, on November 16, 1921. Only a few minutes before I had been informed of the condition by Dr. Stubbe, who regarded it as very serious and had sent the child to the Children's Hospital. The mother informed me she did not wish to take it to the hospital as it would be taken off the breast.

After examining the child, I told her the condition was desperate and that I considered the only chance of recovery lay in complete abstinence from the breast and all other forms of food, giving water only. I sent the patient to Pinjarra Hospital.

On admission the temperature was 38.6° C., the pulse-rate 140 and the respirations 50 per minute with indrawing of the neck and epigastrium. There was deep cyanosis. Some cyanosis had been present from birth, but the child had done well till the onset of the present illness on the previous day. There was a systolic murmur heard all over the chest and the apex beat was in the fifth interspace on the right side. The area of cardiac dulness was normal, but was situated on the right instead of the left side of the chest. The liver occupied the usual situation. There was extensive bronchitis with abundant moist râles and a patch of pneumonia with distinct dulness at the base of the right lung.

The motions were green and offensive. A dose of castor oil was administered and instructions were given to let the child drink water in plenty. Next day the temperature was 38.2° C., the pulse-rate 142 and the respirations 52. The Matron thought the child about to die several times through the night and gave several doses of a mixture of sal volatile and brandy. The castor oil was repeated and the motion was more natural.

From this time a gradual improvement was noticed and the temperature fell by lysis to normal in five days with improvement in pulse and respiration and less cyanosis. The mother was allowed to take the child home at the end of a week in hospital and for two days the child was taking the breast well. According to recent reports the baby is doing well, though it is still somewhat blue.

B.S., girl, aged nine years, was admitted on November 19, 1921. She had been ill for two weeks in her home. She had been cyanosed from infancy and to my knowledge for eight years; she had always been badly nourished. She was extremely thin and very subject to colds and indigestion. I was called to see her a fortnight previously and found her suffering from pneumonia of the base of the right lung. This cleared up. Then the left base became involved, after which her temperature was normal for a few days. The day before admission I found the temperature again high and evidence of effusion at the right base. I suspected empyema and had her removed to hospital.

On admission her temperature was 39.5° C., her pulse-rate 124 and her respirations 24 to the minute. Cyanosis was marked. There was a loud systolic murmur heard all over the chest, loudest in the fourth interspace to the left of the sternum. In this situation the murmur could be heard when the ear was close to but not touching the chest. There was no thrill.

I prepared to aspirate the right side of the pleura. When she was turned on the left side, I found to my great astonishment there was no dulness at the right base, but it was now very evident on the left side, where the breath sounds were distant.

It was not till the next examination on the following day that I made a further discovery. When she lay on the left side the dulness was on that side; when turned on

the right side it appeared there. I asked the Matron to confirm this finding.

The girl was so weak that I did not care to put her in the sitting position.

She made a rapid recovery, the temperature returning by lysis to normal on November 22, the pulse-rate being 90 and the respirations 18 per minute—about her normal rates. The signs of effusion had completely vanished and I did not have an opportunity to ask a *confrère* to help me to elucidate the problem. The only solution which I can put forward, is a communication between the pleuræ. She has since enjoyed rather better than her usual health.

In spite of her extreme emaciation, she was given no food during her febrile attacks, nothing but water and orange juice being allowed. I have not yet had cause to regret this line of conduct and the more extensive my experience grows, the more convinced am I that to give food to patients in a febrile condition is not only useless, but highly dangerous.

Reviews.

INTESTINAL OBSTRUCTION.

DURING recent years there has been a world-wide increasing interest in the pathology and treatment of intestinal obstruction. In his book on acute and subacute intestinal occlusion, M. A. C. Guillaume¹ expresses in a clear and orderly fashion all that is at present known, clinically and experimentally, about ileus and intestinal obstruction; he discusses sensibly the hypotheses which have been advanced to explain the signs and symptoms encountered in these maladies.

There are twenty-one diagrams which illustrate or explain matters in the text to which the author desires to direct special attention. This freedom from illustration in no way detracts from the usefulness of the work; indeed, it is a refreshing contrast to many of the transatlantic books wherein profusion of pictures frequently is substituted for literary lucidity.

Many statistical tables and graphs, based on the work of European, American and Australian surgeons appear throughout the book and are most instructive.

In Chapter V. the author discusses very recent experimental work, chiefly American, on intestinal obstruction and endeavours to assign to different factors their clinical and operative significance. He appears, however, to have very little to say concerning the possibility of explaining many of the experimental findings, as the effects of excessive dehydration of the animal.

In the final chapter, on treatment, he indicates very clearly the value of enterostomy in addition to the relief of the actual obstruction, but he has omitted any reference to the work of Victor Bonney in determining the best site for the enterostomy.

Like most French medical books, the volume has a paper cover and the table of chapter contents is placed at the end of the book. It is unfortunate that there is no index, for it is a useful work of reference.

Analytical Department.

"JELLEX" JELLY CRYSTALS.

"JELLEX" jelly crystals are prepared by Clinton-Williams, Limited, of 22, Carrington Street, Sydney. They consist of a mixture of coarsely powdered gelatine, cane sugar, citric acid, artificial flavourings and colouring matter. The factory is a new building, is very clean and is apparently rat-proof.

The gelatine, sugar and citric acid in weighed amounts

¹ "Les Occlusions Aiguës et Subaiguës de l'Intestin," par A. C. Guillaume; 1922. Paris: Masson et Cie; Post 8vo., pp. 304, with 21 figures. Price: Frs. 12 net.

are placed in a rotary mixing machine. The flavouring agent and the colouring matter are dissolved and the solution added. The whole is then mixed by rotation of the machine for a short time. That the mixing is good is shown by the results of the analyses. The mixture is then dumped on a table and placed in paper bags by means of a hand scoop which holds a definite amount. From time to time a bag is weighed to control the quantity taken up by the scoop. The process is a very simple one, but at present there is too much handling of the product at the various stages. The girls filling the bags are instructed to wear rubber gloves, but at the time of inspection they were not doing so. It was stated that an automatic mixing and filling machine would be installed for the summer trade. The men and girls employed were cleanly dressed and ample provision is made for washing of the hands.

Great care seems to be exercised in obtaining raw products of high quality. The greater part of the gelatine is obtained locally and is delivered already ground packed in bags. Each batch is carefully tested for its jellifying qualities and a rough test is made of the bacterial content. This is carried out by observing a jelly made from the gelatine in a certain way. No clouding from bacterial growth may appear within a given time. While this is not a good test, it seems to be sufficient for the purpose.

The cane sugar is the ordinary, good quality, crystallized sugar. The citric acid is obtained in lumps and is ground in a mill. Analysis of a sample revealed that it contains 99.6% of citric acid and is free from important impurities.

The artificial colouring materials are purchased from reliable firms manufacturing colours for foods. While the examination carried out by our inspector was by no means exhaustive, no objectionable substances could be detected in any of those used. The flavouring substances are also artificial mixtures and were found to be harmless.

Analyses.

Samples were collected at the factory and others were purchased in the open market. The following results were obtained:

Constituents.	Lemon.	Calves' Foot.	Red Curr'nt	Strawberry.	Lime.	Apricot
Gelatine ..	9.29	9.36	9.44	9.04	9.20	8.48
Sugar ..	85.8	86.2	86.2	87.7	87.7	89.2
Citric Acid ..	1.58	1.47	1.33	1.40	1.33	1.40
Water ..	3.02	2.71	2.59	2.34	2.69	2.15
Ash ..	0.36	0.31	0.33	0.34	0.31	0.20
Nitrogen ..	1.624	1.638	1.652	1.582	1.61	1.484

The contents of a packet as sold weigh about 120 grammes. According to the directions this amount is required for one pint of jelly. One pint (568 cubic centimetres) of prepared jelly would therefore contain approximately 11 grammes of gelatine, 104 grammes of sugar and 1.7 grammes of citric acid.

Conclusions.

"Jellex" jelly crystals are carefully prepared from ingredients of good quality. The analysis reveals very small variations of the constituents. They can be used with confidence for the preparation of table jelly. It is a pity that the manufacturers are not content to leave a good thing to take care of itself. The following extract from a leaflet enclosed in the packets savours of exaggeration: "By actual scientific tests and analysis Jellex has been proved far superior in quality, wholesomeness and food value than any other jelly crystal obtainable in this country or elsewhere. . . . For children, in particular, Jellex possesses extraordinary tissue-building, nourishing, strengthening properties." The caloric value of these preparations is largely that of the contained sugar. Wild statements concerning extraordinary tissue-building and nutrient properties are not justified.

The Medical Journal of Australia

SATURDAY, NOVEMBER 4, 1922.

The Control of Venereal Disease.

FROM time to time the opportunity is offered for a survey of the existing state of affairs in regard to the more important infective diseases. While it may not be possible to ascertain with exactness the incidence of a particular disease in the Commonwealth or in one or other of the States, the value of any special measure aiming at the reduction of the incidence can usually be estimated when official figures and facts become available. In the case of venereal disease experimental legislation was introduced in Western Australia in 1915 and the regulations under the Act were promulgated in July, 1916. In January of this year we published an article by Dr. Everitt Atkinson, the Commissioner of Public Health of Western Australia, on the effect of this legislation during the first five years. Dr. Atkinson admitted that it was impossible to say whether the incidence of venereal diseases had been diminished as a result of the new Act or not. There are no figures for the period prior to the introduction of the legislation to compare with the notification figures; moreover, it is obvious that there is no guarantee that the notification figures reveal the actual incidence. If it be assumed that each notification represented a distinct infection, the average number of infections in the year would be 1,143, which is equivalent to 3.69% of population. The males infected were nearly six times as numerous as the females. The period is too short to admit of an assessment of the variations in incidence. The curve is irregular, but there are obviously many vitiating factors at play. During the first years medical practitioners have to become accustomed to the performance of a new duty. On the other hand, there was of necessity a large complement of persons with uncured venereal disease of long standing, who had to be notified for the first time.

Dr. E. Robertson, the Chief Health Officer of Victoria, has just issued a report on the subject of venereal diseases based on the experience of the *Venereal Diseases Act* for a period of five years. The Act is substantially the same as the Western Australian Act. It came into force one year later. Dr. Robertson exercises caution in his expression of opinion concerning the value of the legislation. He writes that, unless infected persons are anxious to continue treatment until cured, the results are not satisfactory. The total number of notifications received during the five years is 33,902, which is equivalent to 6,780 *per annum*. A striking fact is brought into prominence. Of the persons notified, 95% were resident in the metropolitan area of Melbourne. Ballarat, Bendigo and Geelong contributed 523 of the 33,902 infections and the remainder of the State 1,123. The infections in males were nearly six times as frequent as those in females. Gonorrhoea was not quite three times as common as syphilis. The notifications represent an annual incidence of 4.43% of the population. As was the case in Western Australia, the annual incidence curve was quite irregular, but there was a considerable decrease in the number of notifications in 1921. Dr. Robertson is uncertain whether this represents a failure on the part of the medical practitioners to notify or a reduction in the incidence of the disease.

In Western Australia 1,550 notifications were received during the five years of patients having failed to attend for treatment. This is equal to 27.1% of the total number of persons notified as infected. In Victoria there were notifications concerning 5,909 defaulters, which is equal to 17.7% of the total number. In Western Australia 1,034 of the defaulters were traced and the treatment was resumed. In Victoria 2,877 defaulters were traced. All of them save sixty-eight were persuaded to resume treatment. In other words, the law as it stands to-day in Victoria gives opportunities to persons infected with venereal disease to escape from compulsory treatment. Practically nine out of each hundred succeeded in evading the law. It may be admitted that it would be unfair to compare the conditions in Perth and Fremantle with those in Melbourne. The difficulties in a large city

in tracing defaulters must be immeasurably greater than in a small one. Dr. Robertson mentions that defaulters often give fictitious names or addresses, give the name and address of someone else or disappear from the correct address given within the period specified before the second or subsequent visit.

It is obvious that the machinery is insufficient for its purpose. Nevertheless, it would seem that the provision of clinics and other places where infected persons can obtain either gratuitous or inexpensive treatment is attracting a very large proportion of these people. The question of the establishment of a special clinic where small fees would be charged, is under consideration.

The problem of enforcing treatment of all persons infected with venereal disease is a complex one. An appalling amount of syphilis exists among women attending the Women's Hospital. Drs. Hamilton Fairley and Fowler demonstrated this fact some time ago. The nature of the illness of the majority of these women is quite unsuspected by them.

It is always stated that venereal disease is not a crime and that harsh measures should not be adopted to enforce treatment. The acquisition of a venereal infection may be merely a social misdemeanour, but it is surely a heinous offence for a person to endanger his wife, his children and possibly other members of the community by refusing to undergo energetic treatment. In these circumstances there should be no hesitation in adopting any expedient in order to enforce the provisions of the *Venereal Diseases Act*. It should not be beyond the wit of man to devise means of identifying persons with these infections and of tracing them when they endeavour to evade their responsibilities. A few prosecutions and the publication in the daily press of the correct names of the miscreants should have a wholesome, deterrent effect on others.

In a few years it may be possible to learn more concerning the real value of these legislative means for controlling venereal disease. From the information at present available it would seem that good is being effected, but that the leakage is too great.

METHYL ALCOHOL POISONING.

THE use of methyl alcohol as a beverage has been one of the worst features of the many unfortunate results following on the introduction of prohibition in the United States of America. The relative ease with which it can be manufactured and the potency of its intoxicating effect have been largely responsible for this. This form of alcohol, known also as wood spirit, has been used alone or as a substitute for ethyl alcohol or spirits of wine. In some instances it is used to give a potency to what are supposedly harmless drinks. This substitution or addition has doubtless frequently been made without any knowledge of its possible effects, but many cases of poisoning and even death from its use have been reported. Commercial methylated spirits must not be confused with methyl alcohol, for it is a mixture of uncertain proportion of ethyl and methyl alcohol and on this account has not been officially recognized in the British Pharmacopœia.

Dujardin-Beaumetz and Andigé in 1879, Pohl in 1892 and Joffroy and Servaux in 1895 all drew attention to the fact that, while the intoxicating effect produced by methyl alcohol was similar to that produced by ethyl alcohol, its effect was more prolonged. Paresis and paralysis after large doses such as twelve grammes were recorded. Pohl described intense fatty degeneration of the liver of animals caused by methyl alcohol, but it was Joffroy and Servaux who first investigated its real toxic effect. They found that intravenous injection of methyl alcohol caused hæmorrhagic inflammation of the gastro-intestinal tract. Hunt also investigated methyl alcohol poisoning. He showed that methyl alcohol was retained much longer in the tissues of the nervous system and that therefore its effects were cumulative. In experiments on animals he produced degeneration of the optic nerve through its influence. In order to understand the differences produced by methyl and ethyl alcohol after ingestion, it is necessary to study their fate in the body. Ethyl alcohol or C_2H_5OH , when taken into the body, undergoes a process of oxidation and is excreted in the form of carbon dioxide and water. Methyl alcohol, on the other hand, undergoes partial oxidation. Pohl found that the methyl group was not split off from acetone, but was split off from methyl alcohol, methyl acetate, formaldehyde and methylamine. The oxidation to formic acid takes place in these bodies. Formic acid is an exceedingly toxic body and is the cause of most of the symptoms produced by methyl alcohol.

Dr. I. M. Rabinovitch has recently reported his observations in a fatal case of methyl alcohol poisoning.¹ The patient was a woman, seventy years of age, who had taken one drinking glass of wood alcohol with suicidal intent. She subsequently became drowsy and much confused. She was slightly cyanosed and had an odour of acetone in her breath. After a few days weakness increased considerably, the cyanosis became deeper and broncho-pneumonia developed. Incontinence of urine was present and

¹ *Archives of Internal Medicine*, June 15, 1922.

urinary examination showed the specific gravity to be 1.018, the presence of albumin in a concentration of 7.8 grammes to the litre, of hyaline and granular casts, of a few blood cells and of a trace of acetone. The uric acid content of the blood was increased from 3.1 to 9.3 milligrammes per hundred cubic centimetres in less than six days. The blood urea nitrogen increased from forty-two to one hundred and forty-four milligrammes per hundred cubic centimetres in the same period and the creatinin content of the blood increased from 1.6 to 4.5 milligrammes per hundred cubic centimetres.

Dr. Rabinovitch concludes that impairment of kidney function rapidly took place. He points out that his findings in regard to urea nitrogen differ from those of other observers, who failed to find an increase. He thought it possible that his patient may have suffered from a previously existing chronic nephritis. Hyperglycemia was present throughout the course of the disease. This was put down to impairment of kidney function. An acidosis was present and, while other observers have attributed this to incomplete oxidation of the methyl alcohol, Dr. Rabinovitch thought that retention of phosphates in the blood may have been partly a determining factor. He also suggests that the acidosis might have been partly due to the formation in the body of methylene derivatives from the action of formaldehyde on the amino-acids present. He studied the cyanosis that was present by estimating the oxygen content of the venous blood. This was greatly diminished in amount. No methæmoglobin was at any time present in the blood of the patient and presumably played no part in the production of cyanosis. A *post mortem* examination showed the presence of acute parenchymatous nephritis, cloudy swelling of the heart and liver and bronchopneumonia. Methyl alcohol was found to be present in the tissues after death, which occurred five days after admission to hospital.

This study of the patient's condition is interesting in that Dr. Rabinovitch draws attention to the presence of lesions elsewhere than in the nervous system, for, as he states, so much attention is generally paid to the latter that the involvement of others is frequently overlooked. His investigation, moreover, is important from the point of view of public health and shows that something more than legislation is necessary in dealing with prohibition.

ABSCCESS OF THE LUNG.

ABSCCESS of the lung has always been looked upon as an extremely dangerous condition and its treatment has caused much anxiety, particularly in regard to operative interference. As in most pyogenic conditions, successful treatment depends largely on its early recognition.

The clinical symptoms are usually, though not always, typical and with modern methods of skiagraphy there can be little excuse for failure to recognize the presence of a collection of pus in the lung, when once destruction of tissue

has taken place, whether that pus be the legacy of an unresolved pneumonia, the result of a septic infarct, the extension of a neighbouring focus, such as empyema, or the outcome of inhalation from an operation on the respiratory passages or of any other process.

That some cases of abscess of the lung heal spontaneously is undoubted. Spontaneous healing is much more likely to occur in abscesses situated in an upper lobe on account of the influence of gravity in facilitating emptying of the cavity. When the abscess is in the lower lobe, the cavity is not so readily emptied and coughing is urgent and distressing.

Expectant treatment must be adopted only after careful consideration and, while it may be justified more often in the upper lobe, its adoption in abscess of the lower lobe, must be cautiously undertaken and not unduly prolonged. By waiting too long fibrosis in the walls of the cavity is allowed to occur and subsequent healing by operative means is rendered more difficult.

Of the operative measures used in this regard, incision and drainage has been and is still sometimes used. An operation in two stages is sometimes the operation of choice, though when pleuritic adhesions have been present, and even in the absence of adhesions, the cavity has been drained at a single sitting without the production of an empyema. Since Forlanini introduced his method of producing an artificial pneumothorax and reported its application to a patient suffering from a chronic abscess of the lung in 1910, this method has been used by many surgeons. Thus Verbizier in 1918 treated successfully by artificial pneumothorax a patient who suffered from gangrene of the lung with cavitation. Tewksbury in 1919 reported fourteen patients suffering from acute pulmonary abscess whom he had treated by artificial pneumothorax. Of these eleven were cured and three died. Dr. Herbert M. Rich has recently recorded the histories of ten patients suffering from pulmonary abscess.¹ Two of these recovered spontaneously. In eight an artificial pneumothorax was produced. Two of them died. One of these suffered a bilateral broncho-pneumonia after an appendicectomy. The history showed that death was not due entirely to the pulmonary condition. The other patient suffered an infarct after an operation on the *cervix uteri*. The abscess was situated near the periphery of the lung and the formation of an artificial pneumothorax was followed by the bursting of the abscess and the production of a pyo-pneumothorax. The patient died after drainage had been established.

Dr. Rich concludes that the ideal treatment for abscess of the lung is the production of an artificial pneumothorax, but states that a possible exception should be made in abscess situated near the periphery. The results obtained by this method of treatment are encouraging and the treatment itself must be regarded as sound in that it allows collapse of the cavity, evacuation of the contents and rest for an infected or inflamed area.

¹ The American Journal of the Medical Sciences, September, 1922.

Abstracts from Current Medical Literature.

PHYSIOLOGY.

Effect of Posture and Exercise on Pulse Rate and Arterial Blood Pressure.

E. C. SCHNEIDER AND D. TRUESDELL (*American Journal of Physiology*, August, 1922) have studied the pulse rate and the three arterial pressures—systolic, diastolic and pulse pressures—under four conditions, recumbency, standing, immediately after standard exercise and two minutes after the exercise. The usual procedure was to require the subject to recline for five minutes and then to count the pulse rate for twenty or thirty seconds, the count being continued until two consecutive intervals gave the same result. After this the arterial blood pressure was determined. The subject was next requested to stand and be at ease for one or two minutes to allow the pulse to assume a uniform rate. When two consecutive counts of the pulse rate were the same, this rate was recorded and the arterial pressure for the standing position then determined. The subject next stepped on a chair about forty-five centimetres high five times in fifteen seconds. Immediately both feet were on the floor after taking the exercise the pulse rate was counted for fifteen seconds and after that the arterial pressure determined. After a further two minutes' standing the pulse rate and blood pressures were again determined. Observations were made on two thousand four hundred and forty-eight aviators in groups. Two unselected groups of two thousand and two hundred respectively showed an average reclining pulse rate of seventy-four and seventy-five, rising to ninety-two and ninety on standing, to one hundred and two after exercise and after two minutes the pulse rate was slightly below the original standing rate in the majority. In two groups of selected physically fit men, one hundred and forty-four and two hundred and four respectively, the reclining pulse rate of seventy-two and seventy rose to eighty-six and eighty-three on standing and to ninety-seven and ninety-five after exercise. The superiority of the fit groups seemed to be more clearly demonstrated by the lower standing rate, a smaller reclining to standing increase and a more rapid return to the normal standing rate after exercise. In the large group of two thousand unselected persons the mean reclining systolic pressure was one hundred and eighteen and the standing systolic pressure one hundred and twenty. The systolic pressure of a physically fit group rose from a reclining figure of one hundred and twelve to one hundred and eighteen. It was noted that those persons having a low systolic pressure while standing had an increase on reclining, those with a high systolic pressure while standing had, as a

rule, a decrease, while between these was a group which tended to remain the same. The systolic pressure uniformly tended to rise after the exercise and two minutes after the exercise nearly half the persons tested showed a slightly sub-normal pressure. A reclining diastolic pressure of seventy-two, rising to eighty on standing, falling two millimetres after exercise and returning to the original standing level in two minutes, was the average picture. It appears that the postural rise or fall in the systolic pressure will, as a rule, influence the pulse rate change in some slight degree; that a postural rise or fall in the diastolic pressure will be compensated for by a sufficient change in the systolic pressure to maintain the pulse pressure within the general range of change; that the postural pulse pressure is altered more by changes in the systolic than in the diastolic pressure and that a high or low systolic pressure is ordinarily associated with a high or low tuning of the entire cardio-vascular mechanism.

Physical Fatigue and Susceptibility.

E. H. OPPENHEIMER AND R. A. SPAETH (*American Journal of Physiology*, 1922, Volume LIX.) have carried out a series of experiments to determine whether a state of fatigue will produce a greater susceptibility to toxins and infections in laboratory animals. By "fatigue" is meant a condition of temporary exhaustion produced by excessive muscular exertion. The experiments were carried out on white rats and as far as possible sisters or cousins were used as controls for the fatigued animals. Fatigue slightly increased the resistance to intra-peritoneal injections of pneumococcus. The experiments do not confirm the generally accepted conception that a fatigued individual is more susceptible to disease than a non-fatigued individual.

Excretion of Chlorides and Bicarbonates by the Human Kidney.

H. W. DAVIES, J. B. S. HALDANE AND G. L. PESKETT (*Journal of Physiology*, July, 1922) have studied the relation between the excretion of chlorides and bicarbonates in the human urine. There is a limiting concentration for chloride and bicarbonate in the urine. When strong solutions of sodium chloride were drunk, the urinary chloride rose rapidly to a value varying between 0.29N and 0.33N, the value being independent of the volume excreted in each hour and only rising slightly when more salt was taken. The highest value recorded was 0.338N during extreme thirst. Similar figures were found for the excretion of bicarbonates. When chlorides and bicarbonates were taken together or successively, both appeared in the urine in large amounts. Neither reached its maximum concentration, but the sum of the two reached a value which (expressed in normality) was equal to the maximum of either. If bicarbonate be given without chloride, the latter may almost disappear from the urine. The antagonism between chloride and bicarbon-

ate excretion is also seen when the bicarbonate is being excreted as a result of forced breathing. Not only is a simultaneous excretion of urea without effect on the kidney's capacity for concentrating chloride and bicarbonate, but urea ingestion, though it may lower the chloride concentration by promoting diuresis, considerably increases the hourly output. It is considered in the light of these results that the chlorides and bicarbonates must be concentrated by the same part of the kidneys, probably re-absorptive in action, and that urea and phosphates are concentrated by a different part which is excretory.

Visceral Sensibility.

A. FRÖHLICH AND H. H. MEYER (*Klinische Wochenschrift*, July, 1922) have investigated the paths of the nervous impulses associated with visceral sensibility. The impulses may travel by way of the afferent spinal nerves, that is, through the posterior roots, or through special sympathetic sensory paths by way of the anterior spinal nerve roots. The authors have been able to establish that in the dog the fibres mediating pain-sensitiveness for the bladder, rectum, distal and proximal colon, small intestine, as well as for the arteries of the limbs, enter the spinal cord through the posterior roots. They are of a nature similar to spinal nerve fibres which are undoubtedly mingled with the vegetative nerves in their passage from the end-organs right up to their entrance into the spinal cord and which cannot be anatomically separated from them. The anterior roots are not concerned in the pain path. The pain-sensations from the bladder pass by way of the pelvic nerves to the posterior sacral roots, from the intestines by the splanchnic nerves and the hypogastric nerve chiefly to the posterior thoracic roots. As adequate stimuli for pain sensation in the hollow viscera, dilatation and cramp-like contractions must be considered. For the occurrence of colicky pain a fixation of the loops of intestine and a resultant dragging of the whole mesentery and its attachments are unnecessary. For the pain resulting from dilatation a stretching of the attachments of the mesentery seems necessary, though only in a small area and close to the intestinal wall. Colicky pain resulting from contractions can occur without any dragging of the mesentery.

BIOLOGICAL CHEMISTRY.

Experimental Rickets.

E. V. MCCOLLUM, N. SIMMONDS, J. E. BECKER AND P. G. SHIPLEY (*The Journal of Biological Chemistry*, August, 1922) have demonstrated the existence of a vitamin which promotes the deposition of calcium in bone. Since 1913 it has been known that certain fats contain a substance or substances which promote the growth of animals

fed on purified food-stuffs. In the absence of these fats animals cease to grow, while growth is resumed when fats are added to the diet. Later xerophthalmia of a particular type was noted as a pathological condition which invariably resulted from the specific withdrawal of the fat-soluble vitamin from the diet. In 1919 Mellanby suggested that rickets was caused by a deficiency of fat-soluble A in the food. In 1921 the authors published the results of experiments which suggested that there were differences between cod liver oil and butter fat in respect to their action on the development of bone on diets containing inadequate amounts of calcium salts. The authors have now completed further experiments designed to discover whether the anti-rachitic substance in fats is distinct from that preventing the onset of ophthalmia. They have examined a selected group of fats in respect to three kinds of effects on nutrition. Firstly they tested cod liver oil, shark oil, butter fats and some vegetable oils for potency in curing xerophthalmia due to lack of fat-soluble A. Secondly they tested comparatively the same fats to determine their value in promoting growth in young rats restricted to a diet poor in calcium. Thirdly they sought to find their relative value for inducing the deposition of calcium salts in the bones of rachitic animals. The experiments have shown that cod liver oil oxidized for twelve to twenty hours does not cure xerophthalmia in rats. It does, however, cause a deposit of calcium in the bones of young rats suffering from rickets. This shows that oxidation destroys fat-soluble A without destroying another substance playing an important part in bone growth. Cocoa-nut oil is lacking in fat-soluble A, since it will not prevent the onset of xerophthalmia, nor will it cure the condition. On the other hand, this oil contains a substance stimulating the deposition of lime salts in animals affected with rickets. Cod liver oil, shark oil and turbot liver oil are effective in curing xerophthalmia, adequate to protect the body against the effects of a deficiency of calcium in the diet and capable of promoting the deposition of calcium salts in the bones of rachitic animals. Vegetable oils, such as cotton-seed oil, maize oil, sesame oil and olive oil, do not possess the power of curing xerophthalmia, neither do they increase the efficiency of the tissues in using lime, when it is not adequately provided, nor do they initiate the cure of rickets. Butter fat contains much fat-soluble A, but is much less effective than fish oils in promoting the use of calcium. The authors consider that their results prove that the anti-rachitic effect is not due to the presence of fat-soluble A, but demonstrate the presence of a fourth vitamin regulating calcium metabolism.

Lime Needed by Children.

H. C. SHERMAN AND E. HAWLEY (*The Journal of Biological Chemistry*, August, 1922) have carried out experi-

ments to determine the rate of storage of calcium in normal children of different ages and to ascertain the nature and amount of the intake of calcium needed to promote optimal storage of calcium in growing children. Incidentally observations have been made in respect to oxidized phosphorus. Three groups of children were kept in special rooms for ten consecutive days with varying diets. A complete balance of intake and output of calcium was made, the whole series covering four hundred and seventeen experiment days with twenty-one children. With an ordinary diet containing seven hundred and fifty cubic centimetres of milk, furnishing 0.75 to 1.0 gramme of calcium daily, children of three to thirteen years of age stored 0.15 to 0.6 gramme of calcium daily, the amount stored being about 0.01 gramme per kilogram of body weight *per diem*. With an allowance of a litre of milk daily the storage of calcium was increased. An optimal storage occurs when 1.1 litre (one quart) of milk is given each day. The daily intake of calcium will thus be approximately one gramme. This amount is double that needed by the average adult person. Apparently the calcium of vegetables is utilized less efficiently than that of milk. The authors consider that there is some likelihood of the food of children on ordinary rations being furnished with less calcium than will suffice for their daily requirements.

Nutrition of Chickens.

E. B. HART, J. G. HALPIN AND H. STEENBOCK (*Journal of Biological Chemistry*, June, 1922) have continued their investigations into the nutritional requirements of baby chickens. They had been led by their previous experiments to the conclusion that the addition of roughage, as paper or charcoal, to a "synthetic diet" prevented to a large extent the condition of leg weakness which otherwise made its appearance. Further experience showed, however, that failures continued to occur among chickens reared in the laboratory, despite the utmost care in respect to roughage and diet. The authors have been led by new studies to recognize the primary importance of an ample supply of fat-soluble vitamin A or of the vitamins in cod liver oil as a factor in avoiding trouble in rearing baby chickens in confinement. The authors draw attention to the rapid rate of growth of chickens, which much exceeds that of rats. Chickens grow well and uniformly from forty grammes weight to seven hundred grammes weight on a diet of white corn and skim milk, provided that cod liver oil is available in generous quantities. In the experiments three groups have been used. In the first group a mixture of ninety-seven parts of white corn, two parts of calcium carbonate and one part of sodium chloride, together with skimmed milk *ad libitum*, has been given. The second group has received the same food, but fifty grammes of cod liver oil has been mixed with the

grain-salt ration. The third group has served as a check and received bran, yellow corn, middlings, charcoal, fish scrap, whole milk. No water has been given to any of the groups. All the birds in Group I. have died within six weeks, but those in Group II. have made steady progress, weighing from six hundred and sixty grammes to eight hundred and seventy grammes in eleven weeks. After four weeks five individuals of Group I. and five from Group II. have been taken for blood analysis. The amount of inorganic phosphorus in the serum has been found less than half in the members of Group I. as compared with members of Group II.. A similar condition of the blood has been noticed in infants suffering from rickets.

Synthesis of Vitamin A.

H. L. JAMESON, J. C. DRUMMOND AND K. H. COWARD (*Biochemical Journal*, April, 1922) have examined the source of vitamin A in many fish oils. They bring forward evidence that the fat-soluble vitamin A in these oils is derived from the food of the fishes. Pure cultures of a common marine diatom, *Nitzschia closterium*, grown in sterilized sea water, contain large amounts of vitamin A. This fact is determined by feeding rats with rations in which small weights of the diatoms form the sole source of fat-soluble vitamin. Observations on a number of marine plants in the plankton show that these contain vitamin A. These plants are eaten by small marine animals, mainly copepods, larval decapods and molluscs. The animals serve as food for the fishes. Those fish which yield much liver oil, feed on many species. At one season in Newfoundland they take a small fish, the capelan, extensively. This fish is rich in fat-soluble vitamin. The authors are of opinion that the vitamin A in fish oils and fish liver oils are due to the synthetic powers of the marine algae which form the fundamental food of all marine animals.

Basal Rations.

M. BOND (*Biochemical Journal*, April, 1922) has suggested that dried egg white be used instead of caseinogen in the basal ration employed in experiments in which rats are fed. It is always a matter of some difficulty to free caseinogen from milk fat. It is probably for this reason that it sometimes seems impossible to obtain a curve of deficiency, although apparently no fat-soluble A is present in the ration. In an initial series the ration contained 30% of dried egg white. Young rats grew well on a ration in which dried egg white formed the sole source of proteins. In a second series 20% of protein in the form of dried egg white was used in the ration. The rats maintained steady growth. The author discusses some of the dietary circumstances of lactating rats and points out that rations with high content of proteins induce diarrhoea in the young rats.

Special Abstract.

ARTIFICIAL PNEUMOTHORAX.

DR. L. S. T. BURRELL AND DR. A. SALUSBURY MACNALT have been entrusted by the Tuberculosis Committee of the Medical Research Council to produce a report on the value of artificial pneumothorax as a therapeutic measure. The report¹ is a very thorough one and contains much detail of value to those practitioners who purpose employing this procedure. In the following much of this detail is necessarily omitted.

After tracing the history of the artificial production of pneumothorax for the purpose of permitting the lung to rest and to become healed of some lesion, Dr. Burrell expresses his views in the following words:

"I do not suggest that this method of treatment is the only one for pulmonary tuberculosis and it certainly has its limitations, but in selected cases it gives a very good chance to patients who can expect nothing from any other form of treatment."

The Apparatus and the Method of Application.

Dr. Burrell recommends the apparatus devised by Lillingston and Pearson as being simple and satisfactory. There are many others. This apparatus is so constructed that by altering the level of a movable bottle a negative or a positive pressure can be obtained and this pressure is immediately recorded by the double-limbed manometer. The needle used is a Clive Rivière needle with cannula. The author insists on local anaesthesia with novocain and adrenalin. The pleura is penetrated after the trochar is withdrawn by pushing the blunt cannula through the membrane. The manometer shows a negative pressure with oscillations corresponding to inspiration and expiration. Until the negative pressure with oscillatory variations proves that the cannula is inside the pleural cavity, no air is allowed to enter. Under ordinary circumstances three hundred cubic centimetres of air are used at the first operation. The negative pressure is diminished to a greater or lesser extent, but a positive pressure is avoided.

The choice of gas is discussed in a special chapter. Nitrogen, oxygen and air each have their advocates. Helium has been used, but it probably has no special advantages over the gases named. The author has formed the opinion that air is probably the best gas for the purpose. Experimental evidence goes to show that whether oxygen, nitrogen or air be used, the gas removed for analysis shortly after the induction of the pneumothorax comprises large amounts of nitrogen. This would mean that it assumes the composition of alveolar air. The rate of the interchange of the gases is relatively rapid. Nitrogen appears to be absorbed somewhat more quickly than air, while oxygen is absorbed still more readily. The author does not agree with those who believe that the risk of gas embolism is diminished by oxygen.

Selection of Cases.

Artificial pneumothorax has been advocated for patients suffering from pulmonary tuberculosis advancing rapidly as the result of the feeble resistance of the patient. Dr. Burrell has tried it, but all the patients died. The treatment did not appear to influence the course of the disease in any way. In patients with good resistance the disease often becomes arrested as the result of sanatorium or other medical treatment. He states that artificial pneumothorax is unnecessary for these patients, but he considers that they should be carefully watched lest the arrest is not complete. He holds that pneumothorax is especially valuable for patients whose resistance is neither good nor bad. The best prospects are offered when the disease is in an early stage and involves only one lung. If the patient

still has signs of active disease after six months of treatment in a sanatorium and if tubercle bacilli persist in the sputum, artificial pneumothorax is recommended. The majority of these patients go down-hill without this treatment. He is not prepared to wait longer than six months, even if the patient is improving, as the effect of the induced pneumothorax is considerably better when applied early and he is convinced that the risks of the pneumothorax are far less than the risk of waiting too long. When the disease has spread to both lungs and less than one-third of the better lung is involved, the treatment should be tried. At times a great improvement follows. When more than one-third of the better lung is implicated, little good can be expected. The author discusses the treatment of this condition when dealing with the production of pneumothorax on both sides. He advocates the treatment in all cases of repeated hæmoptysis, whether of tuberculous or other nature, in bronchiectasis when toxic symptoms are present, in abscess of the lung, in pleural effusion and to stop the pain of dry pleurisy. He regards extensive tuberculosis of both lungs, extensive tuberculous disease elsewhere, tuberculosis taking the form of a terminal infection, very nervous temperaments, bad nutrition associated with chronic dyspepsia and in some circumstances asthma and emphysema as contra-indications.

Re-inflations.

The object aimed at in the treatment is the gradual collapse of the diseased lung. When pneumothorax is induced for the purpose of arresting hæmoptysis, a large first dose may be given, even if this involves some risk. Otherwise the initial dose does not exceed three hundred cubic centimetres. If the first dose is followed by a reaction, the same amount is repeated as soon as the reaction has subsided. If there has been no reaction, four hundred cubic centimetres are injected on the following day and a further four hundred or five hundred two days later. Injections of half a litre are given at short intervals; the seventh injection may be increased to six hundred cubic centimetres. The guide to the re-inflations is the intrapleural pressure. There should be a gradual decrease of the negative pressure and an ultimate substitution of a slight positive pressure, about four centimetres of water at inspiration and eight centimetres of water as expiration. Dr. Burrell has given large initial doses, even amounting to one and a half litres, but, although he had not experienced any ill-effects, he prefers to give a smaller one. The first injection distresses the patient and consequently he wishes to get it over as quickly as possible. If it can be effected without producing pain or dyspnoea, the dread of a repetition disappears. The early re-inflation is carried out with care and consideration for the patient. After about a month the physician endeavours to find the correct spacing of the refills and the optimum pressure for each individual. The intervals are increased to seven and then to ten days; later they are again increased to fourteen, seventeen and, lastly, twenty-one days. At times it becomes advisable to shorten the period when symptoms, such as an increase of the quantity of sputum, give an indication. At the end of six months an endeavour is made to lengthen the intervals in some instances, but as a rule the author prefers to maintain a three weeks' interval. The aim throughout is to bring about a gradual collapse of the lung and to keep it collapsed.

Dr. Burrell records the opinion of several authorities in regard to the length of the treatment. His own views are that three years should be the minimum and that after this period the lung may be allowed to expand gradually, so that at the end of the fourth year the inflations may be interrupted.

Pleural Adhesions.

A chapter is devoted to the management of adhesions. When the two layers of the pleura are adherent over the part of the lung affected, it may be impossible to produce a pneumothorax. At times a situation may be found where gas may be introduced into the pleural cavity. If the cavity formed by the adhesions is small, very little gas suffices to produce a high positive pressure. It is useless and dangerous to persist under these circumstances. Various observers have given the frequency of adhesions rendering the treatment impossible at between 22% and 37.5%.

¹ "Report on Artificial Pneumothorax," by L. S. T. Burrell, M.A., M.D., M.R.C.P., and A. Salusbury Macnalty, M.A., M.D., Medical Research Council of the Privy Council; Special Report Series, No. 67, 1922. Price: 2s. 6d.

The adhesions may stretch or even rupture as a result of the inflation. Dr. Burrell holds the opinion that this occurrence should be avoided. Often adhesions spread during the course of treatment and after a time the pleural cavity becomes obliterated.

Some interesting and important information is given in connexion with the changes in the intra-pleural pressure. This has to be studied in each patient. It is usual to find that shortly after even a large inflation, the intra-pleural pressure is negative. The lung may remain collapsed, even though the pressure is negative. When effusion fluid is removed and air is injected to replace the fluid, the pressure rises to a considerable extent.

Dangers.

Having discussed the essential points of the induction of pneumothorax in the treatment of pulmonary tuberculosis and other lung conditions, Dr. Burrell examines the alleged and proven dangers of the treatment. Pleural shock is said to be a serious but rare accident. In severe cases the patient feels unable to take a breath, his complexion becomes livid, his pulse-rate rapid and its rhythm irregular and he may lose consciousness. Recovery may take place. Dr. Burrell has experienced this accident twice in the course of 2,332 punctures. The first was a mild attack and recovery followed in two minutes. The symptoms did not recur in this patient at subsequent refills. The second patient was very ill with acute tuberculosis following pleurisy. Two attempts were made to find the pleural cavity, but each failed. As the needle was being withdrawn, the patient stated that he could not breathe. He sat up, gave a few gasps and died. The author holds that the best means of preventing pleural shock is to give an injection of morphine or "Omnopon" and to anaesthetize the pleura with novocain. The piercing of the pleura should not be felt by the patient. Should pleural shock occur, the needle should be withdrawn at once and pituitary extract or other stimulant given. Artificial respiration may be required.

The author claims that gas embolism is a very rare accident. It can be avoided by caution, by the use of a large and blunt needle and by giving the patient morphine or "Omnopon" to keep him quiet. Puncture of the lung and puncture of a large vessel or of the heart are mentioned as possible accidents. As a rule they cause no ill-effects, provided that the needle is withdrawn at once.

Complications.

In enumerating the complications of inducing pneumothorax, Dr. Burrell mentions first of all pleurisy. As a rule it is associated with effusion. The symptoms may be slight and rarely do they persist for more than three or four days. If precautions are taken, the pleura need never be infected by the needle, but it may become infected if the lung ruptures. The author has not seen pleurisy with effusion develop in non-tuberculous patients. He has other reasons for concluding that in nearly every instance the pleurisy is a tuberculous one. He recognizes small effusions with or without malaise and pyrexia. The fluid is diagnosed with the aid of X-rays. It becomes absorbed without aspiration. In the next class the fluid does not tend to become absorbed. It may be serous or purulent. In the third class the effusion occurs when the patient is seriously ill, with pyrexia and constitutional symptoms. There is a rapid extension of the pulmonary lesion and death follows. In the mild form rest in bed is all that is needed. In acute pleurisy with purulent effusion the fluid should be aspirated and replaced by air or oxygen. At times it is advisable to wash the pleura out with a mild antiseptic.

Thickened pleura is also described as a complication, as is perforation of the visceral pleura. In the next place, pain is regarded as a complication. The operation should be painless. A feeling of tightness and later pain lasting for a few hours may arise in patients with adhesions and a high intra-pleural pressure. Pain at times comes on some hours after the re-inflation. It is attributed to adhesions. By the use of morphine, it can be controlled. An adhesion may snap during the inflation.

Surgical emphysema is not uncommon. It is said to be a harmless condition which clears up rapidly. It can

be prevented by pulling down the skin before the puncture of the needle is made, so that when the skin is released, the site of puncture lies over the rib.

Artificial Pneumothorax on Both Sides.

Dr. Burrell states that, while patients are usually not benefited by the treatment when a pneumothorax is needed on both sides, it is at times possible to transform a rapidly spreading tuberculous lesion into a chronic fibroid lesion by a pneumothorax of short duration. The operation is carried out first on one side and, when the progress has been checked on this side, the lung is allowed to expand and the other side is treated. If the vital capacity does not improve as the first lung expands, the idea of inducing a pneumothorax on the other side must be abandoned.

Dr. Burrell discusses in some detail the effect of artificial pneumothorax on the vital capacity. With care the vital capacity may be increased, but it will naturally become reduced when the pleura is re-inflated.

Radiographic Control.

A special chapter is devoted to the value of radiography and radioscopy in controlling the collapse of the lung and for other diagnostic purposes. This chapter is beautifully illustrated by skiagrams. Dr. Burrell attaches much importance to this radiographic control.

The Results of Treatment.

In conclusion, he deals with the results of treatment. He is disinclined to present his figures as statistics proving anything. He was unable to induce an efficient pneumothorax in one hundred and seven patients. Of these forty-three had early stage disease of one lung only and twenty-six had middle stage disease with some involvement of the other lung. Fifteen of the patients were non-tuberculous. The disease was arrested in forty; the condition was improved in twenty-two; no change was effected in twelve; the condition became worse during the treatment in thirteen and twenty patients died. Less good results were obtained in twenty patients in whom only a partial and insufficient collapse was produced and the treatment was continued for less than two months. Still worse results were registered when the pneumothorax could not be produced owing to adherent pleura.

The second part of the publication is devoted to an analysis of the replies received to a questionnaire addressed to sixteen physicians who use artificial pneumothorax in the treatment of pulmonary tuberculosis.

Nearly all agree that patients with disease limited to one lung should be treated in this way, especially if they have not improved under ordinary methods of treatment. They also regard slight disease of the second lung as no contra-indication. It is held that early treatment is highly desirable. Some difference of opinion exists in regard to the contra-indications. Dr. Morriston Davies, who is less conservative than Clive Rivière, agrees substantially with Dr. Burrell (*vide supra*). The majority of the physicians have come to the conclusion that the artificial pneumothorax tends to improve the other lung, even when there is bilateral disease. In the replies dealing with accidents and complications of the treatment Morriston Davies directs attention to the reactions that may follow the induction. It may be a pure tuberculous reaction, a coli or streptococcal reaction or a mixed reaction. He recommends routine examination of the urine for sulphur-ethers as indicators of chronic intestinal stasis and so-called toxæmia. It seems that with the exception of pleurisy and pleural effusions the accidents and complications are rare in expert hands and can be avoided.

In connexion with the choice of gas, Morriston Davies, Felkin, Lucas, Pearson and Sutherland favour nitrogen; Carling and Woodcock use oxygen, the latter reverting to air for refills. All the others have expressed a preference for air. Rolleston does not consider the choice of importance. Slight differences are also to be found in the size of the injections and in the intra-pleural pressures aimed at. All report favourably on the curative value of the procedure. It will be seen that in essential or important matters, there is practical agreement among those replying to the questionnaire.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Western Australian Branch of the British Medical Association was held at the Perth Hospital on September 20, 1922, Dr. D. M. McWHAE, C.M.G., C.B.E., in the chair.

Lupus Erythematosus.

DR. F. GILL showed a patient who had been suffering from *lupus erythematosus* for a period of eleven months. The usual treatment had had no effect on the lesion. X-ray treatment was suggested.

Arterio-Venous Aneurysm of the Leg.

MR. F. A. HADLEY showed a patient twenty years of age who was suffering from an arterio-venous aneurysm of the left leg. The patient had been stabbed in the leg behind the knee twelve years previously and had been subjected to a surgical operation nine months later. For the past four years some ulceration of the skin and swelling of the ankle had been present. Mr. Hadley pointed out that there was a diffuse pulsation and that a definite thrill was palpable behind the knee. The vein in the foot was very much enlarged. Mr. Hadley said that he felt inclined to open the sac and endeavour to close the opening in the artery rather than to tie the vessels above the sac.

Puerperal Septicæmia.

DR. A. J. NYULASY detailed the history of a patient who had suffered from puerperal septicæmia. It had been considered necessary to open the abdomen. The only abnormal signs found had been enlargement of the ovarian veins on each side. These vessels had been ligated. Rapid improvement had followed this procedure and the patient's temperature had become normal the following day.

Restoration of the Round Ligaments.

DR. NYULASY then read a paper on "Restoration of the Round Ligaments" (see page 519).

DR. W. TRETHOWAN raised the question of the use of the pessary in the treatment of retroversion. At the same time, he admitted its usual failure to cure the condition when it had become chronic.

MR. HADLEY referred to the claim made that the anterior layer of the broad ligament was stronger than simple peritoneum. He said that it would be interesting to have serial microscopic sections made of that portion of the broad ligament immediately concerned in the operation under discussion.

DR. O. P. PAGET said that he was impressed with the operation of restoration of the round ligaments. He held the opinion that it was superior to any of the operations hitherto described for retroversion.

DR. NYULASY, in reply, said that the pessary failed to cure retroversion, because, while it gave physiological rest to the round ligaments, it failed to reduce the laxity and restore the tension of the anterior leaf of the round ligament. In other words, the pessary dealt with only one of the factors in retroversion and almost entirely neglected the other factors. In regard to the minute structure of the anterior leaf of the broad ligament, he said that it contained fibrous tissue and unstriated muscle and he had no doubt that histological examination would show this to be the case.

MEDICO-POLITICAL.

A MEETING of the Victorian Branch of the British Medical Association was held at the Medical Society Hall, East Melbourne, on October 18, 1922, Mr. G. A. SYME, in the absence of the President, in the chair.

Extension of the Printing Arrangements of the Australasian Medical Publishing Company, Limited.

THE CHAIRMAN referred to a report that had been issued on the proposals to extend the printing arrangements of the Australasian Medical Publishing Company, Limited. The Council had convened the meeting at the request of

the Directors. He asked the Editor of THE MEDICAL JOURNAL OF AUSTRALIA to explain the scheme.

THE EDITOR gave a short account of the position of the Company and pointed out that under the existing conditions no material increase in the size of the journal could be effected.

Several members spoke in favour of the proposals.

DR. W. KENT HUGHES, the Director of the Company in Victoria, said that he recognized that it would be necessary either to adopt the proposals or to revert to the former method of contracting with an outside printer to print the journal. The Editor had shown that the latter method was very expensive. Dr. Kent Hughes thought that the Editor had been unwise in drawing up the estimated profit and loss account on an exaggeratedly conservative basis. If the undertaking were well conducted, there should be a very much larger profit. The sum allowed for "other publications" was too low. The Editor had shown that this figure would be much larger. On the expenditure side several of the figures were admittedly too high. He recommended the adoption of the proposal.

A motion was passed approving the scheme and requesting the Council to take the steps necessary to ascertain the amount of money that the members would invest in debentures. It was felt that the rate of interest should be not less than 8%. One member promised to take £100 in debentures.

A MEETING of the South Australian Branch of the British Medical Association was held in the Lister Hall, Hindmarsh Square, Adelaide, on October 20, 1922, Dr. T. W. WILSON, the President, in the chair.

Extension of the Printing Arrangements of the Australasian Medical Publishing Company, Limited.

THE PRESIDENT announced that the meeting had been convened at the request of the Directors of the Australasian Medical Publishing Company, Limited, for the purpose of considering a report on the proposed extension of the printing arrangements of the Company. The Editor was present for the purpose of explaining the scheme.

THE EDITOR OF THE MEDICAL JOURNAL OF AUSTRALIA traced the history of medical journals in Australia and detailed the several steps in the development of the organization on which THE MEDICAL JOURNAL OF AUSTRALIA depended. He was anxious not only to make adequate provision for the present, but also to lay a foundation on which an expanded service could be built in the future.

Several questions were asked by members concerning the present arrangements, the proposed methods and the constitution of the Australasian Medical Publishing Company, Limited.

DR. F. S. HONE, the Director of the Company in South Australia, supported the scheme and spoke of the advantages that the members would derive if it were adopted. He emphasized the insecurity of the organization at the present time, which depended too much on the activity of one individual. Under the enlarged scheme the Editor would be freed of much of the detail work and would have adequate assistance.

DR. H. S. NEWLAND, C.B.E., D.S.O., moved the approval of the scheme. He argued strongly in favour of the proposals.

DR. JOHN CORBIN seconded the motion, which was carried unanimously.

It was felt that members would take up debentures more readily if the rate of interest were fixed at 8% or even higher and if the value of the debenture were fixed.

It was explained that the Directors would consider these matters at their next meeting and that three of the Directors had expressed their approval of a higher rate of interest.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated as members of the New South Wales Branch of the British Medical Association:

GORDON, JAMES BRUCE, M.B., Ch.M., 1922 (Univ. Sydney), Western Suburbs Cottage Hospital, Croydon.
 RYAN, JAMES REDMOND, M.B., Ch.M., 1922 (Univ. Sydney), Esk Street, Lithgow.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

(AFFILIATED WITH THE VICTORIAN BRANCH OF THE
BRITISH MEDICAL ASSOCIATION.)

A MEETING of the Melbourne Pædiatric Society was held at the Children's Hospital, Melbourne, on September 13, 1922, Mr. R. HAMILTON RUSSELL in the chair.

Talipes Equino-Cavus.

MR. W. KENT HUGHES presented a boy, aged nine years, on one of whose feet he had operated for the correction of *talipes equino-cavus*. It was proposed to adopt similar measures for the other foot at a later date.

Deformity of the feet had been first noticed three years previously, but as it was becoming aggravated treatment had been sought at the Children's Hospital. It had been said that the boy had contracted "influenza" three years ago; after the illness he had appeared to be weak in the legs and contraction of the feet had been observed. Treatment in the out-patient department by manipulation and the use of plaster of Paris bandages for the maintenance of the correct position of the feet had not effected any sustained improvement and on the boy's admission to the in-patient surgical ward Mr. Kent Hughes had decided to employ operative means.

A crescentic incision along the medial side of the left foot had been preliminary to the free division of the superficial and deep plantar fasciæ and the processes running from the latter as intermuscular septa. In addition the *tendo Achilles* had been divided subcutaneously. The foot had been maintained in plaster bandages for three weeks, at the end of which time the boy had been permitted to walk.

Mr. Kent Hughes pointed out that in *talipes equino-cavus* attention should be paid to the anterior portion of the foot rather than to the posterior, as the deformity was located in the former situation. He commented unfavourably on the operation of removal of the astragalus as practised by some American surgeons in the treatment of this particular form of talipes and also disapproved of the English method of bringing the tendon of the *tibialis anticus* through to the sole of the foot between the metatarsal bones and anchoring it on the plantar side.

Laryngeal Stenosis.

As a second patient, Mr. Kent Hughes showed a boy in whom he had had to deal with laryngeal stenosis. The child had suffered laryngeal diphtheria eleven months previously and since the tracheotomy operation then necessitated had not been able to dispense with the tube. Stenosis of the larynx had been found and in the upper portion of the trachea the airway had been almost completely obliterated by cicatricial tissue.

On June 29, 1922, portion of the scar tissue had been excised from the upper part of the trachea and a rubber catheter inserted through the larynx. This procedure had not been altogether successful and it had been necessary to replace the catheter at frequent intervals. Various devices had been employed in the endeavour to maintain a tube in position with only partial success. On August 15, 1922, a specially designed tube, described by Mr. Kent Hughes as a combination intubation and tracheotomy tube, had been inserted and the wound in the neck closed. The boy had been very comfortable since and at the time of demonstration he had a tube in position extending from the upper portion of the larynx well down into the trachea. He was still a diphtheria "carrier" and failed to yield a reaction to the Schick intradermic test.

Myeloid Sarcoma of Mandible.

MR. KENT HUGHES next presented a boy, aged ten years, who exhibited a myeloid sarcoma of the mandible. Swelling had been present in the lower jaw on the right side for four months. At the outset the boy had complained of "toothache" and at that time swelling of the jaw had been

noted. Extraction of a tooth had had no effect in reducing the swelling, which, on the contrary, had progressed.

On examination a hard swelling was apparent just anterior to the angle of the right mandible; no "cracking" sensation was obtainable on palpation of the tumour and it appeared to be well defined and not accompanied by surrounding infiltration. A small crater was present at the site of the tooth extraction.

A wedge had been excised for histological examination and Dr. Webster's report was that the tissue represented a myeloid sarcoma. This finding was supported by the radiographic appearances.

Epileptic Seizures and Osteomata of the Skull.

DR. F. KINGSLEY NORRIS exhibited a radiogram of the skull of a boy who at the age of seven years had first begun to have epileptiform seizures. He usually suffered three or four fits a day and they had not been influenced very much by the usual drugs employed for the control of epileptic seizures. As far as could be ascertained, there was no history of cranial injury at birth or at any subsequent period.

The skiagram was interesting as showing a number of osteomata growing from the inner table of the skull.

Pyloric Stenosis.

DR. R. M. DOWNES, C.M.G., detailed the case of a child, aged two months, who had been admitted to the hospital on August 3, 1922, presenting the characteristic clinical features of pyloric stenosis. These included vomiting of a projectile character for two weeks, loss of weight, constipation, the presence of visible peristaltic waves and a palpable tumour. The infant had been breast fed and at the time of admission had weighed 3.07 kilograms.

On August 7, 1922, Dr. Downes had performed the Ramstedt operation and on making the incision in the hypertrophied pyloric musculature had noted that the mucous membrane did not protrude into the gap in the muscle as well as might have been desired. The child had been fed with breast milk supplemented by a milk and whey mixture, but within a few days symptoms had recurred.

A screen examination after the administration of a barium meal on August 14 had shown that there was much delay in emptying of the stomach, for barium was still present in the viscus after the lapse of five hours. On August 19 peristaltic waves had been observed and two days later it had been decided to operate again. The former incision had been re-opened and the pyloric incision of the first operation had been found to have healed, its situation being indicated by a linear scar. A further incision had been made into the muscle of the pylorus and on this occasion the mucous membrane pouted well. The baby, who at the time of the meeting weighed 3.3 kilograms, had progressed well since the second operation.

Osteo-Myelitis of the Radius.

DR. DOWNES also showed a boy who in February last had sustained an injury to the lower end of the left radius. Suppuration had ensued in the epiphysis and in the immediately adjoining portion of the diaphysis three weeks later.

Surgical measures, consisting of exposing the medullary cavity, irrigating with Dakin's solution and packing, had been adopted; discharge had ceased, the wound had healed well and the boy had been discharged in three weeks.

It was now noted that the radius was not growing; its styloid process was proximal to that of the ulna and there was already a degree of radial deviation of the hand.

Dr. Downes invited suggestions for treatment designed to correct the radial deviation; it appeared that this would increase unless some measures were taken and as a result the utility of the hand would be very greatly impaired.

Fracture of the Skull with Extra-Dural Hæmorrhage.

A third patient exhibited by Dr. Downes was a boy who sustained a head injury by falling from a van a few hours before his admission to hospital. From the information given it had appeared that he had not at once become unconscious, but after the accident had complained of headache. He had subsequently vomited and later had become very confused before lapsing into coma.

To clinical examination he had presented a hæmatoma in the left parietal region and paralysis of the right arm and leg. The plantar reflex on the right side had been extensor in nature. Cerebro-spinal fluid withdrawn by lumbar puncture had contained blood intimately mixed and had shown no tendency to become clearer in the latter portions withdrawn.

It had been considered advisable to trephine and at the operation a linear fracture of the skull and a large extradural hæmorrhage had been disclosed. Although about three hundred cubic centimetres of blood had been evacuated, there had seemed to be a general oozing with no focal point of hæmorrhage. The middle meningeal artery, inspected through almost its whole course, had shown no laceration. Irrigation with hot saline solution had been effective in stopping the oozing and the boy eventually had done very well. He had been discharged from hospital twelve days later.

Dr. Downes commented on the degree of compression of the brain and its subsequent expansion and observed that the cerebral tissue had been devoid of pulsation at the time of operation.

Perthes's Disease.

Mr. C. W. B. LITTLEJOHN introduced a discussion on Perthes's disease or *coxaalgia frusti* as described by Calvé and furnished an example in a boy aged five years. After three weeks' observation in the out-patient department the child had been admitted to hospital on May 15, 1922, and at that time had complained of pain in the right hip joint. He had walked with a distinct limp and had held the thigh flexed, abducted and everted. Wasting of the muscles had not been conspicuous, but on close examination a slight degree had been apparent; the movements at the hip joint had been limited in the directions of abduction and internal rotation. No shortening had been apparent, although the limp had been pronounced.

No reaction had been obtained with the von Pirquet cutaneous tuberculin test and a similar finding had been returned from the University Laboratory in respect to the Wassermann reaction in the blood serum.

Mr. Littlejohn exhibited radiograms that were typical of the X-ray appearances of Perthes's disease. They revealed flattening and a tendency to mushrooming in the capital epiphysis of the femur.

A brief discussion regarding the ætiology, diagnosis from tuberculosis, prognosis and treatment of *coxaalgia frusti* was contributed by Mr. LITTLEJOHN, Mr. HAMILTON RUSSELL and Dr. F. KINGSLEY NORRIS.

Cervical Adenitis.

Dr. R. L. FORSYTH presented for discussion as to treatment a boy of five and a half years who had been admitted to hospital on July 31, 1922, and who had then had a swelling in the right side of the neck for two months. According to the account given by the mother the swelling had varied in size from time to time. With the exception of an attack of measles two years previously the boy had always enjoyed good health.

Of five other children in the family four were apparently well, but in the fifth, who was at present under treatment in the out-patient department, the blood serum reacted positively to the Wassermann test. A similar finding had been recorded in the mother's serum and she had received a measure of antisyphilitic treatment; at present she exhibited dactylitis and a glandular swelling in the neck. Her first two pregnancies had terminated in the birth of premature children, of whom one had died. The father was apparently in good health; his brother had died of pulmonary tuberculosis and his sister was at present an invalid from the same cause. It was to be noted that the boy had come a good deal into contact with his aunt.

Dr. Forsyth pointed out that the boy appeared well developed and manifested no stigmata of congenital syphilis. Obvious glandular enlargement was present in the right supraclavicular region and in the posterior cervical triangle. The affected glands were discrete, non-tender and of fairly firm consistence; smaller glands were palpable in both axillæ, both groins and in the epitrochlear region on both sides.

As far as could be determined by radiographic examina-

tion, there were no enlarged intrathoracic glands. The tonsils were small and apparently healthy.

Dr. Forsyth stated that no reaction had attended the subcutaneous or von Pirquet tuberculin tests, but when the blood had been sent for the Wassermann test on August 3 and August 7 a positive finding had been returned on both occasions.

Dr. Graham had made an exhaustive examination of the blood, but had not detected any distinctive features.

The boy had been given 0.9 gramme of nov-arseno-billon by the deep subcutaneous method in three doses of 0.3, 0.4 and 0.2 gramme at seven-day intervals. A smart systemic reaction had followed the second injection and a persistent and very irritable dermatitis had supervened on the third. During the course of arsenical injections the glands had seemed to diminish in size to a small extent. The administration of mercury and potassium iodide, which had been suspended during the injections, had been resumed on September 2, but during the last two weeks the glands had unmistakably increased in size.

Suggestions were invited with respect to diagnosis and future treatment.

Chronic Nephritis in Children.

Three examples of chronic nephritis in children were presented by Dr. J. W. GRIEVE on behalf of Dr. A. E. ROWDEN WHITE and Dr. H. HUME TURNBULL.

The first, a boy aged five and a half years, had been admitted to hospital on July 15, 1922, when it had been ascertained that the oedema he had then displayed had been present for three weeks and had been accompanied by loss of appetite, vomiting and a convulsion on one occasion. A history had been elicited of "influenza" three years and of scarlet fever three and a half years ago. The first attack of swelling and puffiness had occurred when the child was eighteen months old and during the last two years he had been in the Children's Hospital on several occasions on account of anasarca and persistent albuminuria.

Edebohls's operation of decapsulation had been performed on both kidneys, but no real benefit had resulted.

On examination, free fluid in the abdomen had been detected as part of a general anasarca. The tonsils had been small and cryptic, several carious teeth had been present, but there had been no cervical adenitis. The systolic blood pressure had been one hundred millimetres of mercury. The daily quantity of urine had varied from six hundred to nine hundred cubic centimetres; its specific gravity was from 1,010 to 1,020 and leucocytes, red blood cells, hyaline and granular casts had been constantly present. The albumin content had average 0.1% by Esbach's method of estimation.

The optic discs were white and clearly defined, presenting the appearances of secondary optic atrophy. The result of the application of the Wassermann test to the blood serum had been recorded as a "partial reaction."

The second patient, a boy aged nine years, had been admitted to hospital on July 27, 1922, having suffered severe headache, constant vomiting and convulsions for forty-eight hours. During the previous fortnight he had displayed unusual irritability and had complained frequently of headache.

For three days after admission he had been extremely irritable and had thrown himself about in such a manner as to necessitate continual watching.

The cerebro-spinal fluid had been found to be under considerable pressure, but lumbar puncture had had no effect in relieving the irritability, which had ultimately been allayed by the hypodermic injection of 0.03 milligramme (one two-hundredth of a grain) of hyoscine. The systolic blood pressure had ranged from 160 to 200 millimetres of mercury and by auscultation the aortic second sound had been noted as distinctly accentuated.

The urine had been acid in reaction and its specific gravity 1,020; a few granular casts associated with bacilluria had been detected on microscopical examination. The daily quantity had varied from nine hundred to twelve hundred cubic centimetres and a considerable amount of albumin had been constantly present.

Ophthalmoscopic examination had revealed definite optic neuritis in the left eye and a small hæmorrhage along the course of the upper temporal vein.

The blood serum had not yielded a reaction to the Wassermann test.

Although the boy's general condition had improved considerably since his admission, he seemed at the time of the meeting to have reached a stage in which he remained stationary.

The third instance was supplied by a girl, aged nine, who had presented herself on June 18, 1922, with complaint of severe headaches and frequent vomiting for seven days. She was rather undersized, very pale, but not oedematous. The tonsils had been submerged, but the left tonsillar group of lymphatic glands had been slightly enlarged.

In the examination of the cardio-vascular system the systolic blood pressure had been recorded as 145 millimetres of mercury and the aortic second sound had been decidedly accentuated.

The urinary findings had been as follow: Total quantity, 1,200 to 1,500 cubic centimetres daily; specific gravity, 1.010; albumin present; microscopically, numerous red blood cells and leucocytes associated with granular hyaline and blood casts.

Examination of the fundi had disclosed optic neuritis in both eyes, no exudate and a small hæmorrhage lateral to the left macula.

The blood serum had not reacted to the Wassermann test and the von Pirquet cutaneous test had also failed to produce a reaction.

From the time of the girl's admission until July 10 there had been a steady rise in the blood pressure and the accentuation of the aortic second sound had become correspondingly more pronounced. Convulsions had supervened on the date mentioned and had been preceded by complaint of very severe headache; examination of the fundi at this stage had revealed retinal hæmorrhages in both eyes and at the time of demonstration the child manifested the characteristic appearances of albuminuric retinitis.

The last attack of headache and vomiting had occurred on September 9 at which time the urine had been bright red from the presence of a large quantity of blood. It was to be noted that enucleation of the tonsils had been performed on July 24, 1922.

Following the presentation of the nephritic children, DR. MARK GARDNER contributed some interesting remarks on the various phases of albuminuric retinitis.

Public Health.

FOOD AND DRUG STANDARDS.

A CONFERENCE of the executive medical officers of the Departments of Health of the Commonwealth and of the States was held in Sydney on September 6 and 7, 1922, at which the question of the adoption of uniform regulations and other matters connected with the foods and drugs standards were discussed. Prior to 1910 there had been instituted in the several States of Australia codes of standards for foods and drugs. In that year it was thought advisable to hold a conference for the purpose of obtaining some uniformity in these standards. An attempt was made at that conference to formulate a code which would be acceptable to all the States. This endeavour was attended with partial success. With the development of trade processes and of new industries and with the accumulation of experience it was found in the succeeding years that the regulations required revision in many particulars. A second conference was held in 1913 at which a complete and in many respects a more satisfactory code was adopted. At the conclusion of the conference it was the opinion of all present that a further conference should be held within a relatively short time. The occurrence of war, however, deferred further action. In the interval various new elements in the protection of new trade processes, in the development of Australian industries and in the accumulation of technical experience rendered revision still more advisable. In these circumstances the third conference was convened by the Federal Government for September 6 and 7, 1922. We learn that at this conference a considerable degree of uniformity in the actual administration and local standards to be adopted for the purpose of the control

of the preparation and sale of foods and drugs was reached by the Commonwealth and State Departments of Health. Certain general principles were accepted which will have the effect of removing many difficulties of administration. Under certain conditions the standards for export may differ from the standards for home consumption of foods. The use of benzoic acid and benzoates was recognized as a measure of preserving foods in certain instances. The metric system of weights and measures was accepted for use in nearly all circumstances in which weights and measures are prescribed. Acid phosphate of soda was recognized on account of its use as a substitute for cream of tartar and a standard for this substance was adopted.

Infants' Foods.

The question of the standards for infants' foods evoked considerable discussion. It was decided that the standard for the proportional composition of human milk of 1.5% of proteins, 3.5% of fats and 6.5% of sugars should not be altered, but that this arbitrary standard for the proportional composition of infants' foods as an administrative interpretation should be made more elaborate than has hitherto been the case. The permissible variation from these figures has been 20% above or below. The conference agreed to admit a variation of 35% excess or deficiency.

The use of boric acid in concentrated milk has been the subject of considerable discussion at the previous conferences. It has now been determined to recognize this and to permit the addition of 0.5% of boric acid for this purpose.

The development of the production of glucose from maize and other grain led to the necessity of fixing a standard for glucose in the various forms in which it is prepared.

The gradual development of control over the preparation and sale of milk for distribution and consumption in its fresh state impelled the conference to consider the advisability of introducing a bacteriological standard for milk. It was, however, held that there were various administrative measures which were more urgent and which were necessarily preparatory to a decision on this matter. It was decided that a sufficiently expansive service in investigation should be carried out in each State with the object of determining the advisability of establishing bacteriological standards for the purity of milk and the nature of such standards.

New standards were adopted in regard to medicated wines and tonic wines. The scheduled list of drugs the labelling of which is compulsory, was altered to correspond with the schedule prescribed under the *Commonwealth Commerce Act*.

INDUSTRIAL HYGIENE.

A FURTHER conference was held under the auspices of the Commonwealth Department of Health on the question of the adoption of an agreement between the several States on the essential principles involved in the control of industries from the point of view of hygiene. At the time of the creation of the Commonwealth Department of Health, one of the items of pressing importance in its reference was the application of the health laws to the various branches of industry. It will be remembered that the International Health Board of the Rockefeller Foundation lent one of its experts in industrial hygiene, Dr. A. J. Lanza, to the Department, for a period of two years. The assistance rendered by Dr. Lanza could not be expected to be productive of permanent results unless there arose during his stay in Australia a public opinion and administrative machinery in connexion with this subject. It was recognized that means should be provided for a system of compulsory inspection and supervision of that branch of hygiene which deals with the health of persons engaged in industrial occupations. At the close of the first year, during which much preparatory work has been accomplished, it was thought to be desirable to introduce this subject for discussion by the several health authorities in Australia. The Commonwealth Government therefore invited the State Governments to send official representatives of their Departments of Health and of their Departments of Labour to a conference. There were present the administrative heads of the Departments of Health of

each State, the Chief Inspectors of Factories of Victoria, New South Wales, Queensland and Tasmania, the Chief Railway Medical Officer of New South Wales and three representatives of the Commonwealth Department of Health, the Director-General and the two experts in industrial hygiene, Dr. A. J. Lanza and Dr. D. G. Robertson.

After a very exhaustive discussion, during which it became apparent that there was complete agreement on the necessity for greater uniformity in practice than has hitherto been manifest, several resolutions were passed. These resolutions took the form of the general approval of measures for the improvement of the health of industrial workers. In the first place, there should be a medical examination under legal control of every adolescent when he enters any branch of industry. Standardized records should be kept of such examinations. The minimum age for employment in factories should be enforced. It was decided that an inquiry should be instituted by the Commonwealth Department of Health into the results of the employment of women in industry, into the most advisable hygienic standards to be adopted for the industries and industrial premises and into the question of the requisite qualifications for factory inspectors and the nature of the course of study for these qualifications. There should further be factory legislation in each of the States controlling dangerous occupations. All dangerous diseases should be notifiable to the health officers of the State. In view of the valuable results which have already been obtained by the employment by private employers of medical inspectors for their establishments, encouragement should be given to employers to maintain an efficient service of medical inspection. Finally, it was resolved that a further conference should be held at an early date to deal with these highly important matters.

Obituary.

STUART PATRICK CROOM.

THE news of the sudden death of Stuart Patrick Croom, which occurred on September 23, 1922, occasioned widespread regret within and beyond the medical profession in Melbourne.

Stuart Patrick Croom was the son of the late John Croom, of "Gowrie House," Warburton, formerly well known in mining circles. He was born at Warburton, Victoria, in 1874.

His decision to study for the medical profession was deferred until he was of an age some years in advance of that at which the majority of medical students enter the University and was taken after he had served for some years as a teacher in the Education Department. During his course, which he completed in 1909, he was a resident student of Queen's College, where he was prominent in the various social and recreative activities of college life.

After graduation he entered into practice at Birchip, Victoria, but appreciating the advantages accruing on travel and post-graduate study, he took an early opportunity of visiting Great Britain. He gained some experience in Edinburgh with his uncle, Sir Halliday Croom, and was subsequently appointed house surgeon at the Leeds Infirmary, where he came under the tuition and influence of Sir Berkeley Moynihan.

On his return to Australia in 1912 Stuart Patrick Croom commenced practice as a surgeon in Collins Street, Melbourne, and at the time of his death was conducting a busy surgical practice. His personality proclaimed a nervous temperament and, without depreciating him in any way, it may be said that he was not easy to know in the full sense of the term. To those who knew him intimately, he was a loyal friend and colleague. During his not very long professional career he embraced every opportunity of improving the quality of his work and for a time served the Melbourne Hospital as Honorary Surgeon to Out-Patients.

He possessed an æsthetic type of mind endowed with a keen perception of the artistic and the beautiful.

Stuart Patrick Croom was married in 1916 to Miss Mary Stirling, an accomplished young lady whose untimely death in 1916 left him a widower. He leaves a young son of six years.

Correspondence.

THE LATE ALEXANDER LEWERS.

SIR: In your issue of to-day, in an appreciation of the late Dr. Alex. Lewers under my name, I regret that in the second last paragraph there is a misprint which gives an unfavourable turn, if not a derogatory sense, to the context. The clause, "He had too much learning for his province" seems to imply an imputation of sciolism, which was never present to my mind. My actual words were: "He took much learning for his province"; an adaptation of Bacon's claim that he had taken all learning for his province.

Yours, etc.,

FELIX MEYER.

Collins Street, Melbourne,
October 21, 1922.

"PULMO-BAILLY."

SIR: Some time ago sample bottles of a preparation called "Pulmo-Bailly" were sent to members of the profession by a Parisian firm. I gave mine to a patient suffering from pulmonary tuberculosis in a very advanced stage. She felt a little better while taking it and is desperately anxious to get some more. The friends have tried in every way—even interviewing the French consul—and failed to find a local firm from whom they can get supplies.

If any reader has his sample still by him and does not want it, I should like to secure it for my patient. It cannot do any harm and it will certainly bring her a certain amount of peace of mind. I shall be glad to hear from anyone having a bottle to spare.

Yours, etc.,

J. HOETS.

20 and 36, Glebe Road, Glebe,
Sydney, October 21, 1922.

DIATHERMY IN THE TREATMENT OF MALIGNANT GROWTHS.

SIR: Dr. Molesworth apparently will not forgive me because at Brisbane I commented unfavourably on the treatment of malignant growths by radio-therapy for over a long term of years. He is, I understand, not very conversant with diathermy, so it is a pity that a man of his high standing should allow his strong prejudice against it to sway his judgement. The mutilation caused by diathermy that he emphasizes so often, may be suggested by the cases that I published; but then he does not take into account the previous mutilation by the malignant growth. The wonderful scar resulting from diathermy has been commented on by many surgeons and some radiologists. Two of the latter frequently refer their intractable cases to me.

Dr. Wettenhall writes in a very different strain and he has seen and appreciated the results of diathermy and his letter is full of valuable suggestions.

To recapitulate, an early rodent ulcer can be successfully treated by surgery, radiation or diathermy. Two methods give immediate relief and one does not need an anæsthetic, but takes a long time.

A rodent ulcer that has attacked periosteum, bone or cartilage, has only two methods of cure—surgery or diathermy.

The intermediate cases—those invading any tissue other than skin—may be cured by radiation, but in my experience many are not cured and if radiologists limit radio-therapy to a trial lasting six months, no great harm would be done beyond a waste of time and money.

It is quite true that I was a student in London, but I have been practising nearly thirty years in Melbourne and for over twenty-nine have been connected with at least

two hospitals at a time and for some time with three, though we may omit the Children's for the present purpose. If Dr. Molesworth will allow early experience as a graduate to include student days, my statement is correct and is corroborated by more than one honorary at our large hospitals.

Yours, etc.,

W. KENT HUGHES.

Melbourne, October 23, 1922.

PUERPERAL INFECTION.

SIR: I stated that "Manual removal of the placenta is the most dangerous of all obstetric operations." Dr. Morton doubts the truth of this statement and ascribes danger to such a view. Will he kindly name any obstetric operation involving greater risk? He has proved both skilful and fortunate and I congratulate him upon his successful efforts.

Arnold De Lea, the best authority I know on puerperal infection, states that: "The mortality after manual removal of the placenta is still very high, owing to direct inoculation of the placental site."

He quotes Rosenthal who, in 12,000 cases, found thirty-nine cases demanding manual removal of the placenta. The mortality was 13%; and Seelingham, who, during ten years, consecutive service, found that in 1,123 similar cases the mortality was 20.8%. Surely such appalling mortality should counsel caution.

Practically all literature with which I am acquainted, endorses my view on this important matter.

"Time element in uterine infection and the application of surgical war principles and practice to obstetrics." The principles enunciated were: (i.) Excision of the wound before the multiplication of implanted organisms. (ii.) Immediate strong antiseptic sterilization. (iii.) Progressive sterilization (Carrel's method). The first and third of these are in obstetric practice practically impossible. The second proved inefficient.

I quote Victor Bonney, than whom no more reliable authority exists. He applied these principles after his war service and thus expresses his opinion: "Puerperal sepsis is a variety of wound infection in the treatment of which both operative measures and the direct application of antiseptics have a very limited scope and our efforts to find some other way of efficiently attacking the organisms have been only partially, if at all, successful up to now. . . . The conclusion we reach, therefore, is that as matters stand to-day prevention is more to be relied on than cure."

I reiterate with confidence that, as a rule, puerperal sepsis is not associated with the retention of gross fragments of placental tissue in the uterus.

Again I venture to quote Victor Bonney: "The point is that uterine sepsis, taking all cases into consideration, both those after labour and those after miscarriage, occurs quite as commonly with a completely, as with an incompletely, emptied organ."

This view I entirely endorse. Upon the erroneous view that puerperal sepsis is a condition usually dependent upon the presence of retained placental products has naturally been based the equally erroneous ideas of the clinical value of exploration and douching.

If the organisms causing symptoms were so located in easily removable tissues and structures, the problems of curative treatment would be tremendously simplified and Dr. Morton's views would be sound.

Unfortunately, almost from the incidence of infection the organisms are situated in the uterine walls and very early reach the veins and lymphatics and beyond them.

"Slight infection contra-indicates early movement, with elevation of the head and shoulders."

Dr. Morton regards such advice as bad counsel.

With regard to drainage, I entirely endorse my colleague's contention; with regard to movement, I do not.

All thromboses in the sinuses and veins are septic. Their end fragments are soft and easily separated. Sudden detachment may set free a septic embolus with fatal result. Further, it is well known that all thrombo-phlebitic processes are aggravated by movement. The occur-

rence of rigors after movement or manipulation in these cases conclusively proves this fact.

Dr. Morton's contention that "We must not expect too much from asepsis in midwifery" compels challenge.

Personally, I believe it to be our only real line of safety. Further, I though it the universal view in modern obstetrics.

Nor can I follow his reasoning therewith. Because asepsis is "practically unattainable," it is none the less desirable.

The wondrous results obtained in the Royal Hospital for Women in cases where pre-maternity observation and preparation are obtainable clearly proves that it is well nigh obtainable.

If my paper and Dr. Morton's critical commentary will induce each practitioner to aim towards aseptic ideals and avoidance of "meddlesome midwifery," I am confident that improved results will rapidly accrue.

Yours, etc.,

WILLIAM T. CHENHALL.

Macquarie Street, Sydney,
October 24, 1922.

A KNOT IN THE UMBILICAL CORD.

SIR: After having been in practice for forty years I met with the above mentioned condition for the first time and think it worth recording.

When the infant's head and neck were born, the cord was twice round the neck and dragging on the placenta. Quickly I placed two ligatures and divided the cord between them. The child was dead, although well developed. On examining the placental portion of the cord I found a distinct knot. This fetus had indeed been practising "looping the loop."

Yours, etc.,

A. G. E. NAYLOR.

Loch, Victoria,
October 20, 1922.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

THE following have been registered under the provisions of the Medical Act, 1912 and 1915, as duly qualified medical practitioners:

- BINNS, JOHN CLYDE, M.B., Ch.M., 1922 (Univ. Sydney), "Cressex," Shirley Road, Wollstonecraft.
- BLANCHARD, DAVID FRANCIS, L.R.C.P. (Edin.), 1894; L.R.C.S. (Edin.), 1894; L.F.P.S. (Glasg.), 1894, 203, Macquarie Street, Sydney.
- BRAY, MABEL IRENE COUSAN, M.B., Ch.M., 1922 (Univ. Sydney), "Inverway," 5, Magney Street, Woollahra.
- CALLEN, AUSTIN ARTHUR, M.B., Ch.M., 1922 (Univ. Sydney), "Salopia," Stockton.
- COOMBE, CHARLES WALTER, M.B., Ch.M., 1922 (Univ. Sydney), "Alberto," Denver Road, Five Dock.
- CORNER, LANCELOT STEWART, M.B., Ch.M., 1922 (Univ. Sydney), "Rothsay," Middle Head Road, Mosman.
- CROSSIN, DAVID JOSEPH, M.B., Ch.M., 1922 (Univ. Sydney), 567, Bourke Street, Moore Park.
- DAVIS, HARRY LYELL ELDERTON, M.B., Bac. Surg., 1922 (Univ. Melbourne), 23, Spofforth Street, Cremorne.
- FLYNN, THOMAS JOSEPH, M.B., Ch.M., 1922 (Univ. Sydney), Limestone Street, Ipswich, Queensland.
- GEEVES, RICHARD CUTHBERT, M.B., Ch.M., 1922 (Univ. Sydney), St. Andrew's College, Newtown.
- HAMILTON, ELLICE ETTIE PEDEN, M.B., Ch.M., 1922 (Univ. Sydney), 86, Addison Road, Marrickville.
- HARBISON, JOHN KENNETH, M.B., Ch.M., 1922 (Univ. Sydney), High Street, West Maitland.
- HOPE, ELSIE JOAN, M.B., 1922 (Univ. Sydney), "Lynn-burn," Holbrow Street, Croydon.

HUGHES, THOMAS DIXON, M.B., Ch.M., 1922 (Univ. Sydney), "Del Monte," Newport.
 HYNDEN, KATHERINE, M.B., 1922 (Univ. Sydney), "Cop-tellin," Marrickville Road, Marrickville.
 KEIRAN, JOHN BERNARD, M.B., Bac. Surg., 1922 (Univ. Melbourne), "Ranelagh," Darling Point, Sydney.
 LOCKE, KEITH MORGAN, M.B., 1922 (Univ. Sydney), 69, Boyce Street, Glebe Point.
 MACKAY, ERIC ECCLES, M.B., Bac. Surg., 1920 (Univ. Melbourne), Broken Hill Hospital, Broken Hill.
 McCONNEL, SARAH VICTORIA, M.B., 1922 (Univ. Sydney), Marshland, Wondai, Queensland.
 MCCREDIE, HAROLD ANDREW, M.B., Ch.M., 1922 (Univ. Sydney), "Leicester," Point Road, Woolwich.
 REID, JAMES SCOTT, M.B., Ch.M., 1922 (Univ. Sydney), "Blair-logie," Newtown Road, Hobart, Tasmania.
 RYAN, FRANCIS PATRICK, M.B., Ch.M., 1922 (Univ. Sydney), "Araluen," Esk Street, Lithgow.
 RYAN, JAMES REDMOND, M.B., Ch.M., 1922 (Univ. Sydney), "Araluen," Esk Street, Lithgow.
 SAUNDERS, IDA BLANCHE, M.B., Ch.M., 1922 (Univ. Sydney), 99, Woniara Road, Hurstville.
 SCHMIDLIN, FRANK, M.B., Ch.M., 1922 (Univ. Sydney), 39, Phillip Street, Sydney.
 TAHMINDJIS, GEORGE, M.B., Ch.M., 1922 (Univ. Sydney), 15, Irving Street, Sydney.
 TAYLOR, JAMES PATRICK, M.B., Ch.M., 1922 (Univ. Sydney), Cooma Street, Yass.
 WALKER-SMITH, ANGUS BUCHANAN, M.B., Ch.M., 1922 (Univ. Sydney), "Alawah," Tower Street, Manly.
 WEST, HENRY JESSE, M.B., Ch.M., 1922 (Univ. Sydney), "Elouera," Springdale Road, Killara.
 WHITFIELD, RALPH ALISTER, M.B., Ch.M., 1922 (Univ. Sydney), Bathurst Street, Woollahra.

Books Received.

ESSENTIALS OF ZOOLOGY FOR STUDENTS OF MEDICINE AND FIRST YEAR STUDENTS OF SCIENCE, by Alexander Meek, D.Sc.; 1922. London: Longmans, Green & Company; Demy 8vo., pp. xii. + 325, with 145 illustrations. Price: 10s. 6d. net.

Medical Appointments.

DR. J. B. LEWIS and DR. J. J. O'GRADY (B.M.A.) have been appointed Honorary Clinical Assistants of the Ophthalmic Department of the Adelaide Hospital, South Australia.

DR. K. J. G. WILSON has been appointed Resident Medical Officer at the Brisbane Hospital, Queensland.

APPROVAL has been gazetted of the appointment of DR. F. L. UTHER (B.M.A.) as an "Appointed Member" of the Licensing Court for the Licensing District of Cooma, New South Wales.

DR. H. M. BENSON (B.M.A.) has been appointed District Medical Officer and Public Vaccinator at Greenbushes, Western Australia.

DR. W. H. LONG (B.M.A.) has been appointed Government Medical Officer at Ardlethan, New South Wales.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tententes sought, etc., see "Advertiser," page xviii.

HOSPITAL FOR SICK CHILDREN, BRISBANE: Honorary Physician to Out-Patients and Honorary Assistant to the Ear, Nose and Throat Surgeon.

RICHMOND DISTRICT HOSPITAL, NORTH QUEENSLAND: Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmaln United Friendly Societies' Dispensary Friendly Societies Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phoenix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B. M. A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

- Nov. 5.—Victorian Branch, B.M.A.: Council Nomination Paper Issued.
 Nov. 8.—Western Australian Branch, B.M.A.: Council.
 Nov. 10.—New South Wales Branch, B.M.A.: Clinical Meeting.
 Nov. 10.—Queensland Branch, B.M.A.: Council.
 Nov. 10.—South Australian Branch, B.M.A.: Council.
 Nov. 14.—New South Wales Branch, B.M.A.: Ethics Committee.
 Nov. 15.—Victorian Branch, B.M.A., and Melbourne Pediatric Society: Joint Meeting.
 Nov. 15.—Western Australian Branch, B.M.A.: Branch.
 Nov. 16.—Victorian Branch, B.M.A.: Council; Nomination of London Representative.
 Nov. 16.—North-Eastern Medical Association, New South Wales.
 Nov. 15.—Victorian Branch, B.M.A.: Branch.
 Nov. 21.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 Nov. 21.—Illawarra Suburbs Medical Association, New South Wales: Annual Meeting.
 Nov. 23.—Brisbane Hospital for Sick Children: Clinical Meeting.
 Nov. 24.—New South Wales Branch, B.M.A.: Branch.
 Nov. 24.—Queensland Branch, B.M.A.: Council.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated. All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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